

# PBM MARINER

in action

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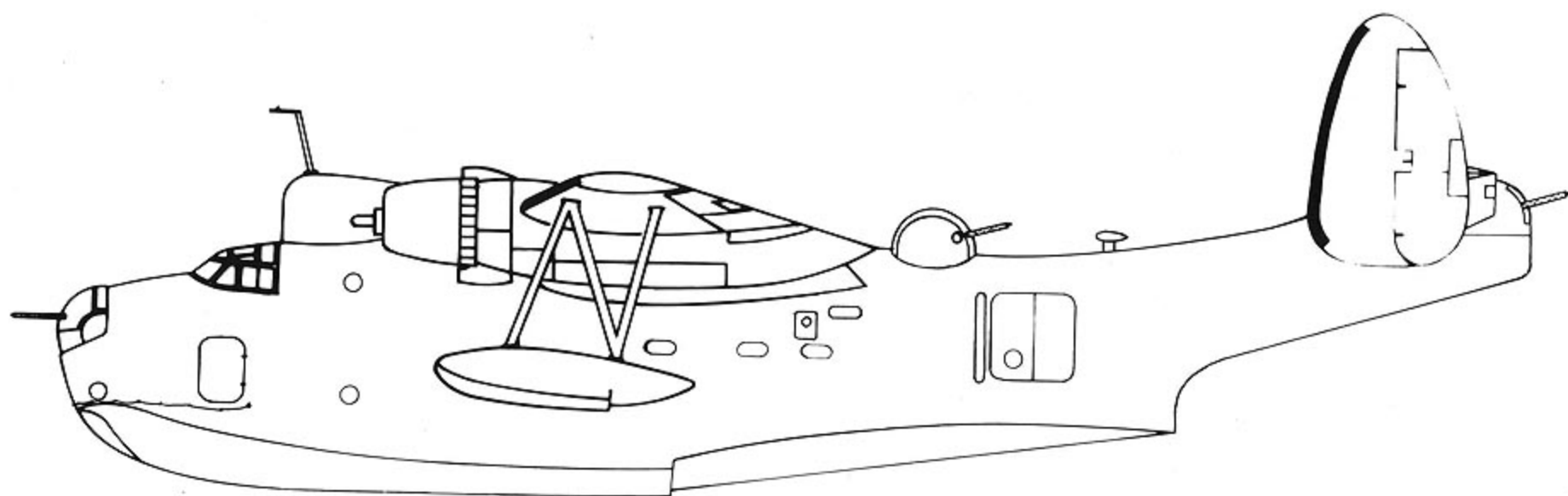
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**SPECIAL**  
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# **PBM MARINER** **in Action**

**Including The Martin P5M Marlin,  
JRM Mars and P6M SeaMaster**

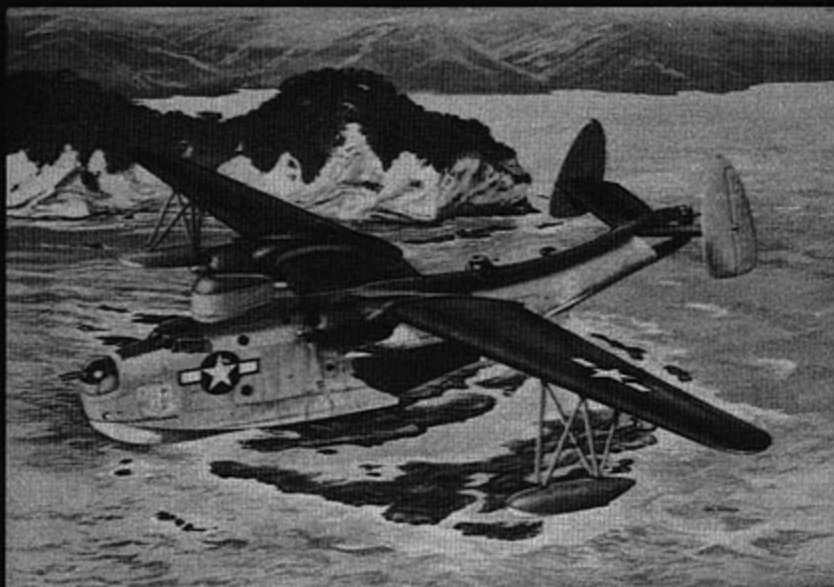


**by Bob Smith**

**color by Don Greer**  
**illustrated by Perry Manley**



**squadron/signal publications**



(Cover) LT (JG) Roger Frangkiser's PBM-5 Mariner (Crew 18) of VPB-21 flying into Tokyo Bay on 9 September 1945, enroute to Ominato Bay on the northern tip of Honshu, Japan. VPB-21 was the lone seaplane squadron supported by USS CHANDELEUR (AV-10) as part of Vice Admiral Frank Jack Fletcher's North Pacific Occupational Fleet.



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## DEDICATION

This book is dedicated to the pilots, aircrewmembers, squadron and tender personnel who kept the Martin flying boats flying. I include the men and women at Glenn L Martin who designed and built these rugged airplanes, as well as all those who serviced them at US Naval Air Stations, and other facilities.

## The Author

Bob Smith learned to fly at Parsons, Kansas Junior College in the Civilian Pilot Training program during 1940. He worked at Beech Aircraft in Wichita from June of 1941 as an inspector in the flight hangar until enlisting as a Navy aviation cadet in July of 1942. Smith graduated at Corpus Christi, Texas in June 1943, flying PBY Catalinas, and received operational training at Jacksonville, Florida, also in PBYs, and was then assigned to transitional training in Martin PBM Mariners at Banana River, Florida.

Smith was assigned to VP-216, a new PBM squadron then forming at Harvey Point, North Carolina, which would be one of the first three squadrons to be equipped with the PBM-3D Mariner for duty in the Pacific Theater. VP-216 flew with VP-16 from tenders during the assault on Saipan in June of 1944. VP-216 moved to Palau in September, operating at Kossol Passage and flying patrols in advance of the landings at Leyte in the Philippines.

Smith returned to Banana River in late 1944 for Patrol Plane Commander (PPC) training. By June of 1945 he had a new PBM-5 and was part of a replacement crew assigned to VPB-21. In August they were headed for cold weather outfitting at Eniwetok. VPB-21 moved to Ominato Bay in Northern Honshu on 10 September 1945 from where Smith flew shuttle flights to Tokyo. Smith separated from the Navy in October of 1945 after some 1,600 hours of pilot time. 1,300 hours were in the PBM Mariner.

Smith settled in Los Angeles with a Bell System career (Pacific Telephone) of thirty-three years. He has been a National Trustee of Naval Aviation Inc (ANA) since 1978, and has coordinated annual PBM-ANA reunions since 1983.

## ACKNOWLEDGMENTS

The author wishes to thank all the people who assisted with photos, information and data used in this publication. A special appreciation is extended to three retired Navy Captains: William T Hardaker, Floyd Harris and Albert Raithel who flew the PBM Mariner and later Martin flying boats, and to Tom Doll, Norman Polski and Bill Riley for their many hours of assistance. A special thanks are also extended to the helpful personnel of the Operational Archives, U S Naval History Division. Significant assistance was also received from the following:

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Smithsonian Institution

Tailhook Association

U S Navy

United Technologies Corporation

Pratt & Whitney Archives

Martin's PBM-5, the final World War II production model of the Mariner is seen on a flight out of Baltimore. (Mark Aldrich Collection)





# INTRODUCTION

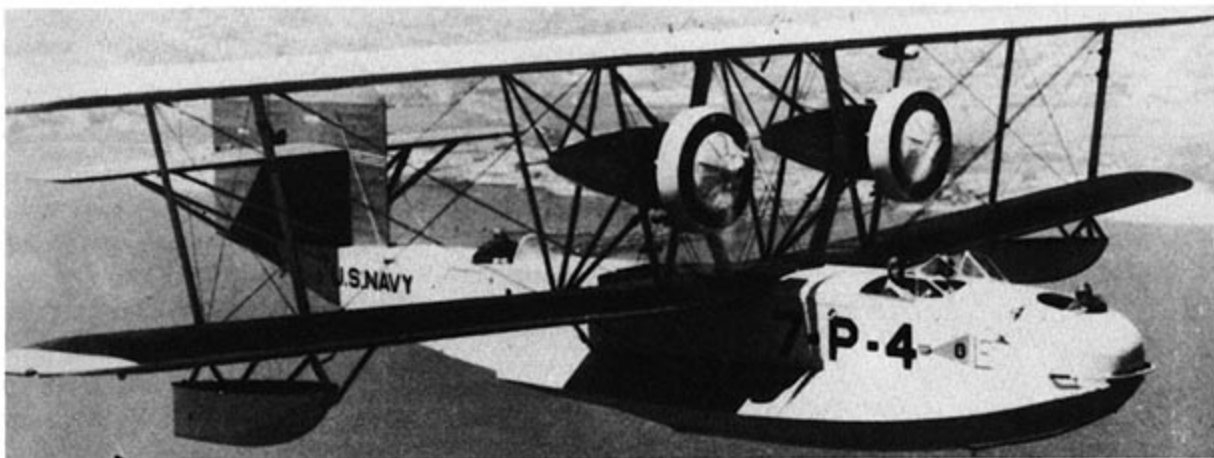
The Martin PBM Flying boat was a real work-horse during World War II. PBMs were in squadron service before Pearl Harbor was attacked, and were already at sea, deployed and fighting Nazi U-boat wolfpacks in 1942. PBM-3Rs (Naval Air Transports) were given delivery priority in 1943 to fly much of the critically needed NATS cargo and passengers. The PBM-1, PBM-3C and PBM-3S had sunk ten U-boats by the fall of 1943. Sixteen PBM Mariner squadrons were operating in the Atlantic when PBM-3Ds began to deploy to the Pacific in January of 1944.

PBM-3Ds were used in the Pacific throughout 1944, until they began to be replaced by PBM-5s during the spring of 1945. By January of 1945 more patrol squadrons were equipped with Mariners than any other aircraft. The PBM's record of rescuing twice as many men from the open seas during the Okinawa assault than were rescued by any other Naval source, was a great tribute to the rugged Mariner, which would remain in production until 1949.

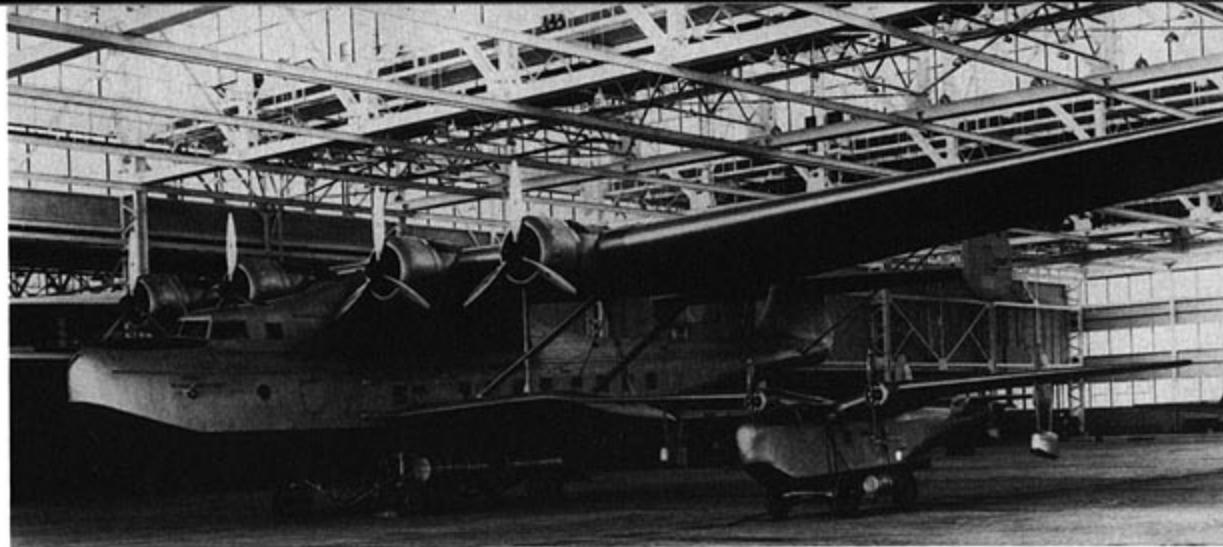
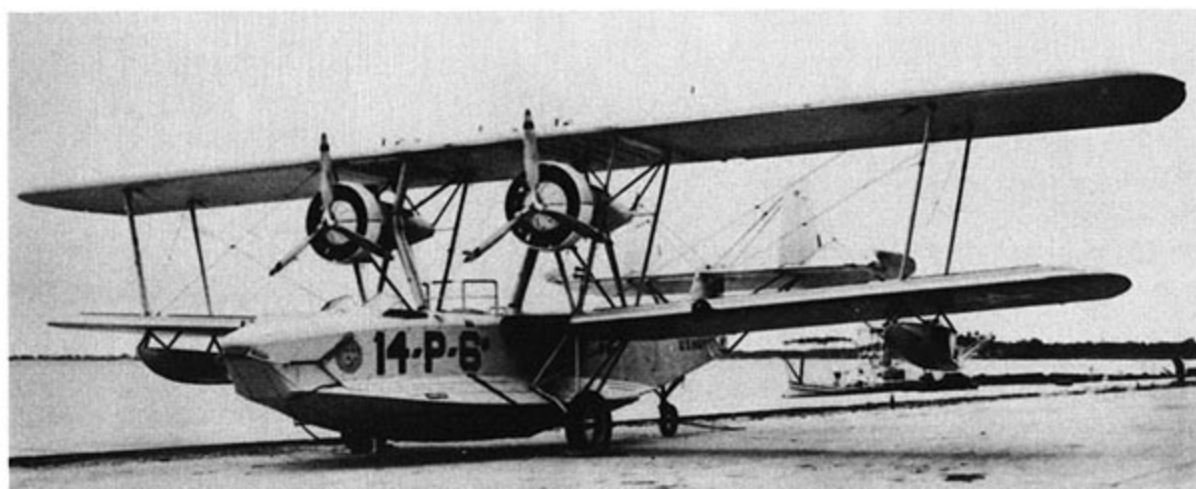
Glenn L Martin was born in Santa Ana, California. He made his first flight in 1909, and soon switched from auto repair to building flimsy airplanes. His first factory was in a church building in Santa Ana. He was briefly involved in a partnership with one of the Wright Brothers in 1916.

He established the Glenn L Martin Company in Cleveland, Ohio, with access to Lake Erie in which to test his floatplanes and flying boats. Martin became one of the leaders of American aviation during World War I, along with Donald Douglas as his Chief Engineer. Douglas left Martin to form the Douglas Aircraft Company in 1920. James 'Dutch' Kindelberger, who would later help establish North American Aviation, worked for Martin during the early 1920's, as did several other aviation leaders. Martin employed some of the nation's best aerodynamic engineers in his fledgling aviation company.

**(Below) One of thirty Martin PM-1s built to Naval Aircraft Factory (NAF) specifications. Initially, PM-1s had open cockpits and uncowled 525 hp Wright 1750-D engines. (USN)**



**(Below) Martin built twenty-five (NAF) PM-2s with twin rudders and a pair of 575 hp Wright R-1820-64 engines. (USN)**



**(Above) The one and only Soviet clipper, Model 160, which was about twenty percent larger than the three China Clippers, is seen in the Martin plant during late 1937. Parked next to the Clipper is the Model 162-A. Both are in 'cradles' that permitted movement but not taxiing. (Martin Marietta)**

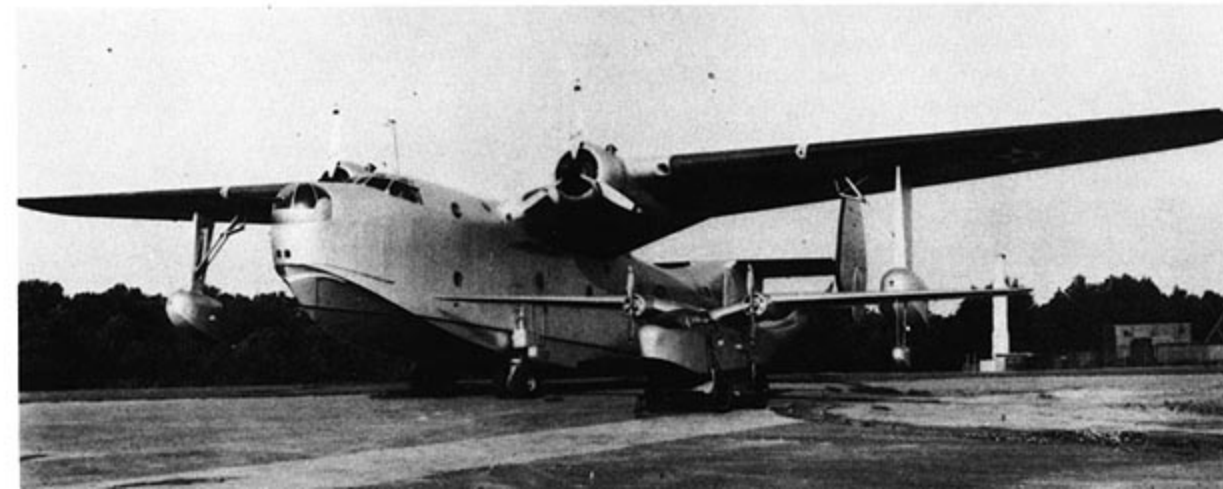
The Martin Company was considered innovative, quick from design to production and competitive in price. Martin moved to Baltimore as the United States moved into the great depression, where he built the PM-1, PM-2 and P3M flying boats to the Naval Aircraft Factory's (NAF) specifications during the early 1930s, in competition with Consolidated Aircraft Company. This rivalry would become intense when the parasol winged Consolidated PBY Catalina flying boat evolved.

## CONTRACT DECISION

In 1937 the Navy requested designs for a Patrol Bomber that would be a "larger, stronger, more sea worthy successor" to the Catalina. Consolidated and Sikorsky quickly began designs of four-engine models. At this time the 'majestic' China Clipper flying boats were capturing the attention of the nation, including President Roosevelt. As early as 1936 Martin had announced plans for a still larger clipper, largest of them all, which would become the war-time XPB2 MR-1R Mars.

Under the company designation Model 162 Martin engineers designed a clean lined, twin engined all-metal flying boat with an exceptionally deep hull that was wider at the bottom than at the top. The most unusual feature of the Martin design was a gull wing configuration that was adopted to keep the engines above the water spray while still allowing the wing to be attached to the top of the fuselage rather than in a parasol configuration where the bottom of the wing was attached directly to a

**(Below) Quite a pair! The three-eighths scale Model 162-A had been flying since 1937. It was first seen by the public in 1937 when it was photographed alongside the huge 'Soviet Clipper' that Martin had built and delivered to the Soviets in January 1938. On the XPBM-1 the antenna wires ran from the top of the rudders to the 'utility pole' mast above the cockpit. (Smithsonian Institution)**







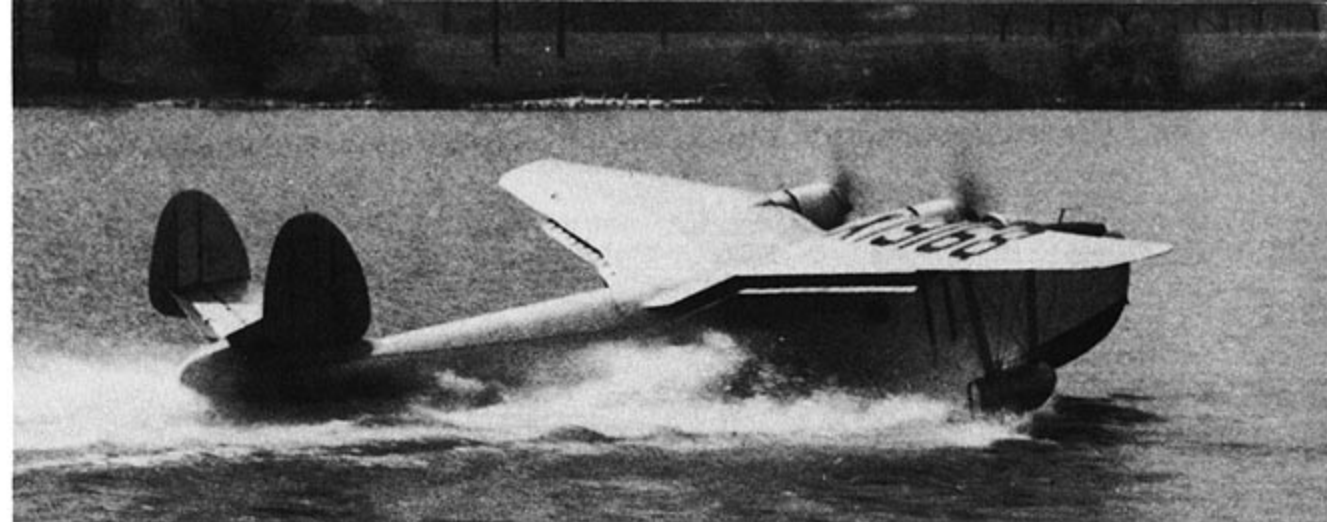
(Above) The Model 162 XPBM-1 prototype on the Martin ramp being readied for its initial test flight on 18 February 1939. (Smithsonian Institution Photo)

superstructure which was attached to the top of the fuselage. Retractable outrigger wingtip floats similar to those on the Catalina were installed. On 30 June 1937 the Navy issued Martin a contract to build a prototype under the designation XPBM.

X = Experimental  
P = Patrol  
B = Bomber  
M = Martin

In an aviation design first, Martin built a three-eighths size man-carrying flying model under the designation Martin Model 162-A. Since no radial engines were small enough to fit into the scaled down engine cowlings, a single engine was installed in the fuselage that powered both 7 foot propellers with V-belts. This piloted scale model proved extremely useful, especially in providing hydrodynamic characteristics. In a highly unusual move, and based on the impressive performance of the scale model, the Navy placed an order for twenty production PBM-1s on 18 December 1937, fourteen months before the full size XPBM-1 prototype flew.

(Below) An early test flight of the XPBM-1 is with its floats still extended and dummy turrets in place. The horizontal tail plane has yet to have the dihedral added to it matching that of the gull wing. (USN via Gann)

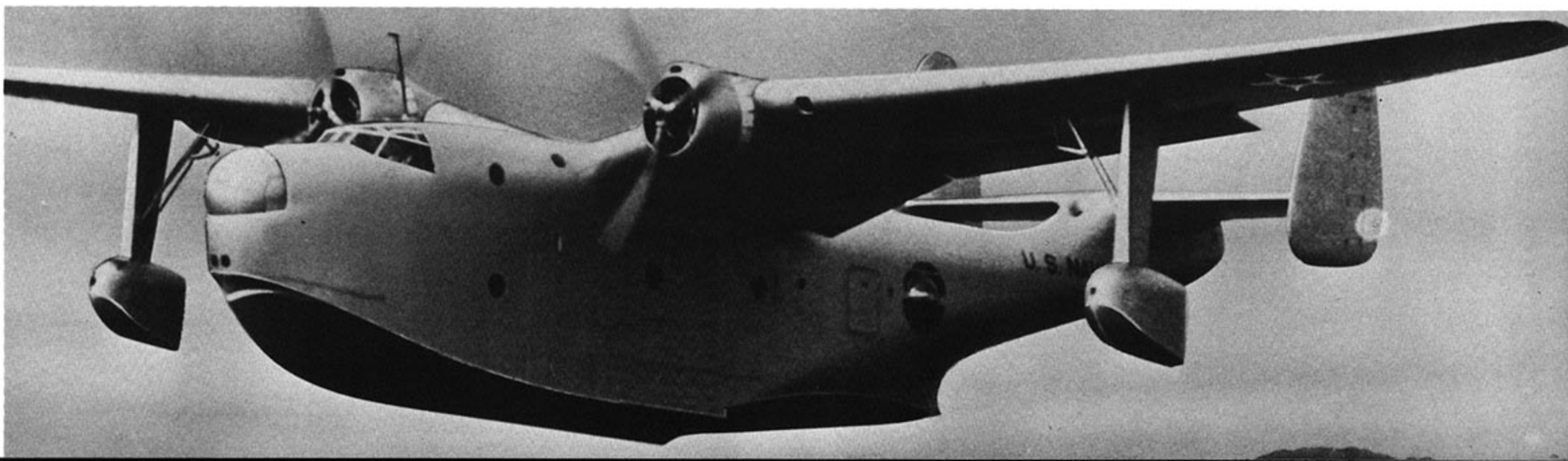


(Above) Martin's Model 162-A was powered by a Glenn Martin Chevrolet inverted four-cylinder air cooled 120 hp engine and was flown by a single pilot. The Model 162-A has been fitted with new dihedral to the horizontal tail. The model was stored in the Martin plant for many years until donated to the Smithsonian Institution Air and Space Facility in 1953. While the Model 162A has often been referred to as being one-quarter scale its dimensions actually measure to three-eighths scale. (W T Hardaker)

The XPBM-1 (BuNo 0796) made its initial flight on 18 February 1939. The gull wing span was 118 foot, with power being provided by a pair of newly introduced Wright Cyclone R-2600-6 1600 hp fourteen cylinder twin row radial engines driving three bladed propellers. The deep hull was double-decked under the pilot's compartment. Provisions were made for five single .50 caliber machine guns, one each in the nose and dorsal gun turrets, on swivel mounts on each side of the hull amid-ship, in a prone position in the tail. A 20MM gun could be installed as an alternate to the nose machine gun. 4,000 pounds of bombs or depth charges could be carried in unique bomb bays built into the engine nacelles.

Flight testing proceeded satisfactorily, and other than some tail problems, and some porpoising which had been accurately forecasted by the three-eighths Model 162A, flight characteristics were good. To solve the tail problem dihedral was added to the horizontal tail surfaces creating a horizontal tail that matched the dihedral of the gull wing. This proved to be a sound 'fix' for most of the tail problems. The twin fins, however, did not remain in the vertical position, they remained at a ninety degree position to the horizontal stabilizers.

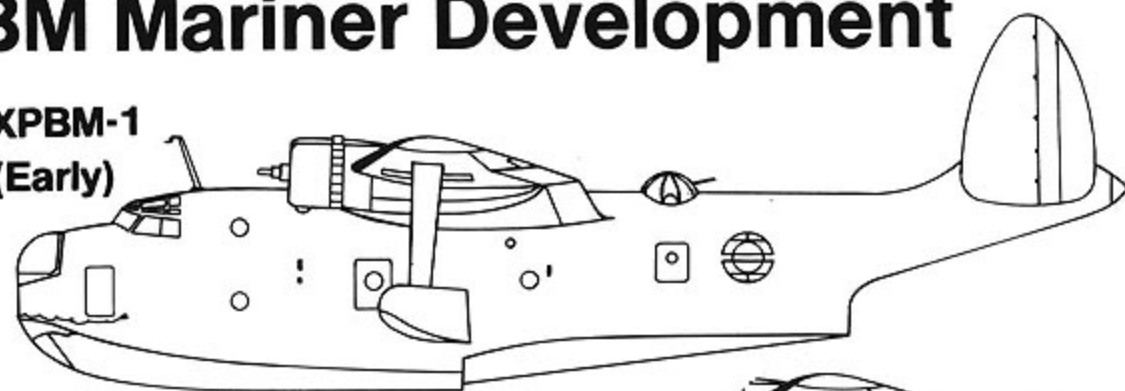
The XPBM-1 was accepted by the Navy on 7 September 1939 and was temporarily assigned to VP-55 and VP-56 at Norfolk, Va, beginning what would be near complete dominance of US Navy seaplanes for the next twenty-five years.



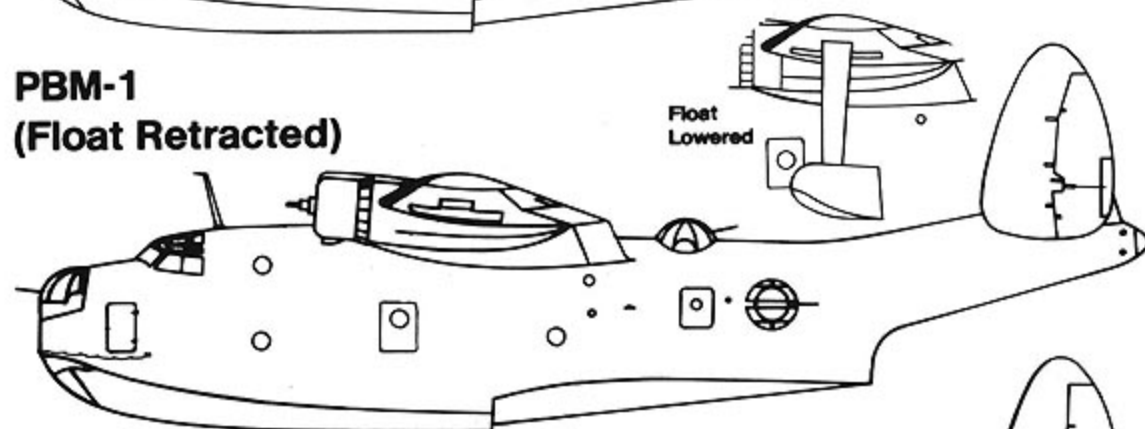


# PBM Mariner Development

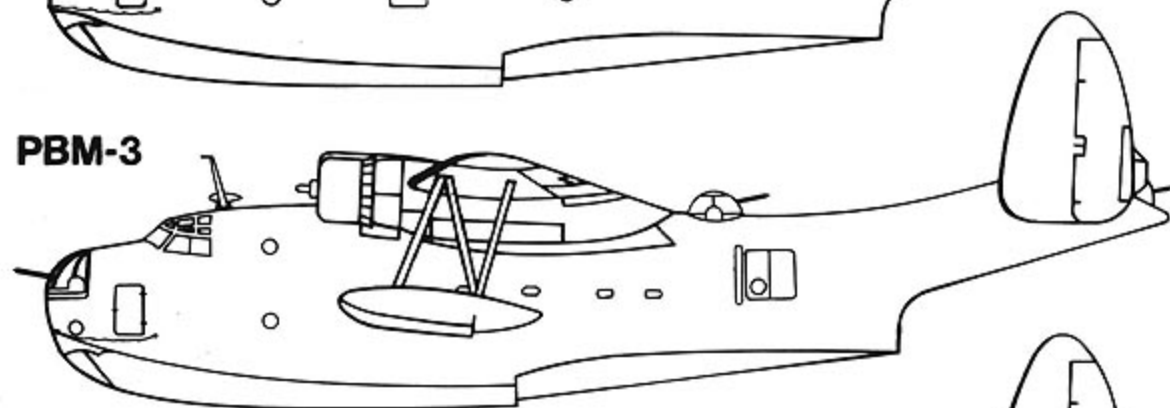
**XPBM-1  
(Early)**



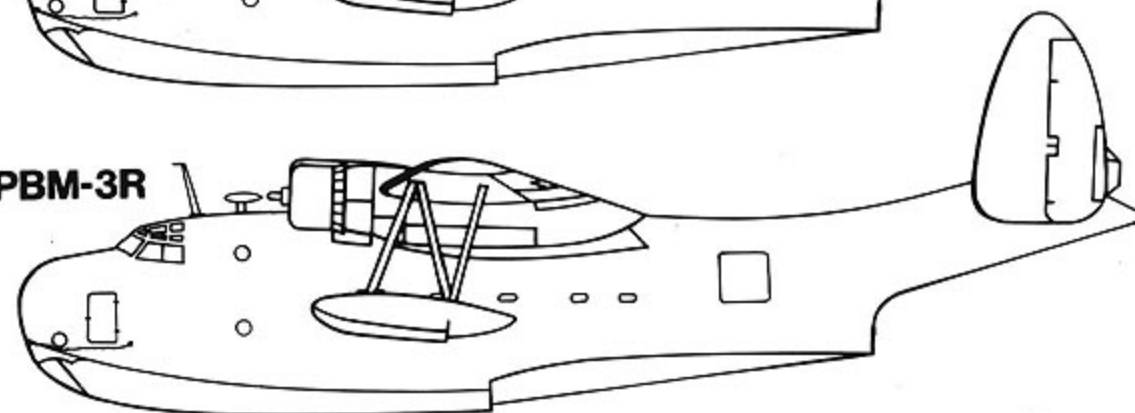
**PBM-1  
(Float Retracted)**



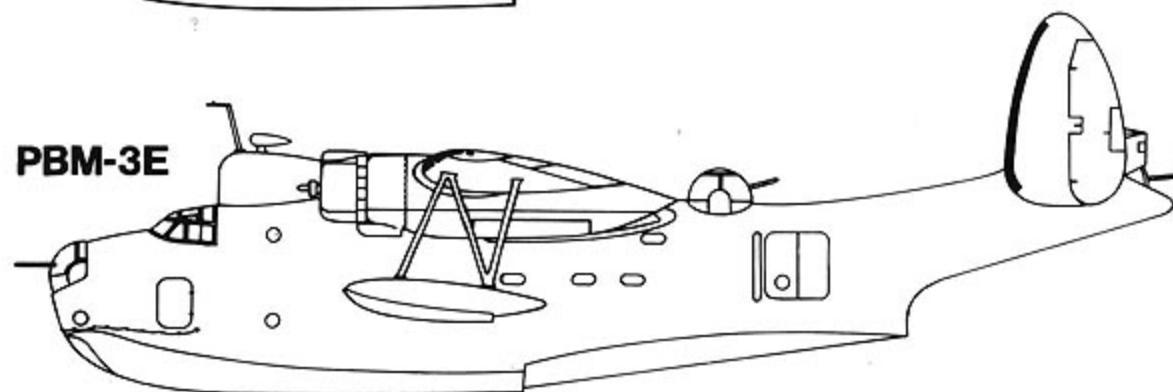
**PBM-3**



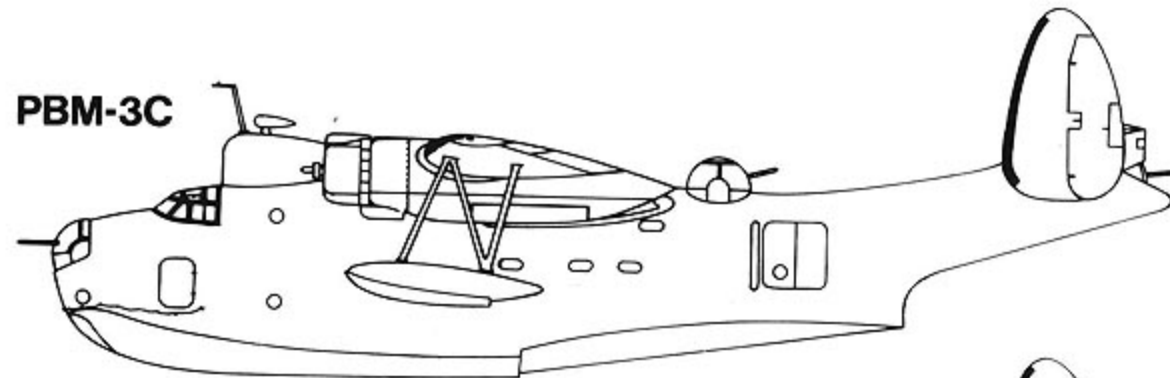
**PBM-3R**



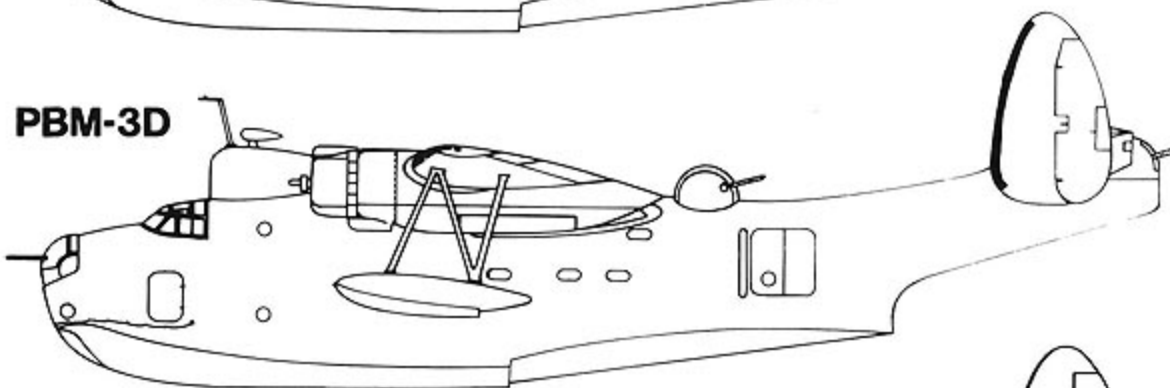
**PBM-3E**



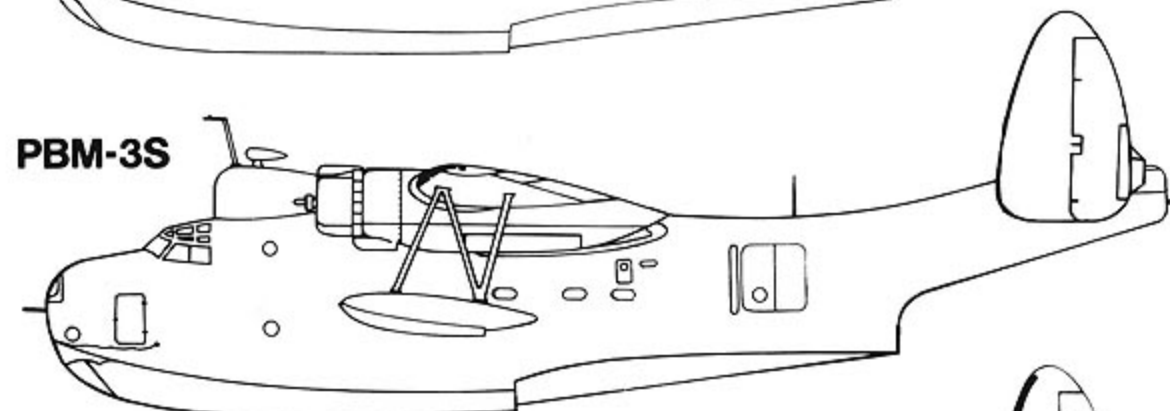
**PBM-3C**



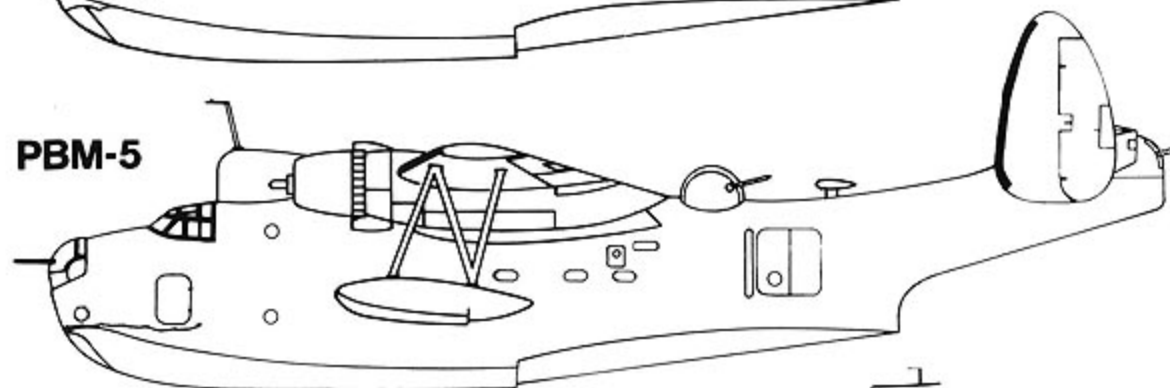
**PBM-3D**



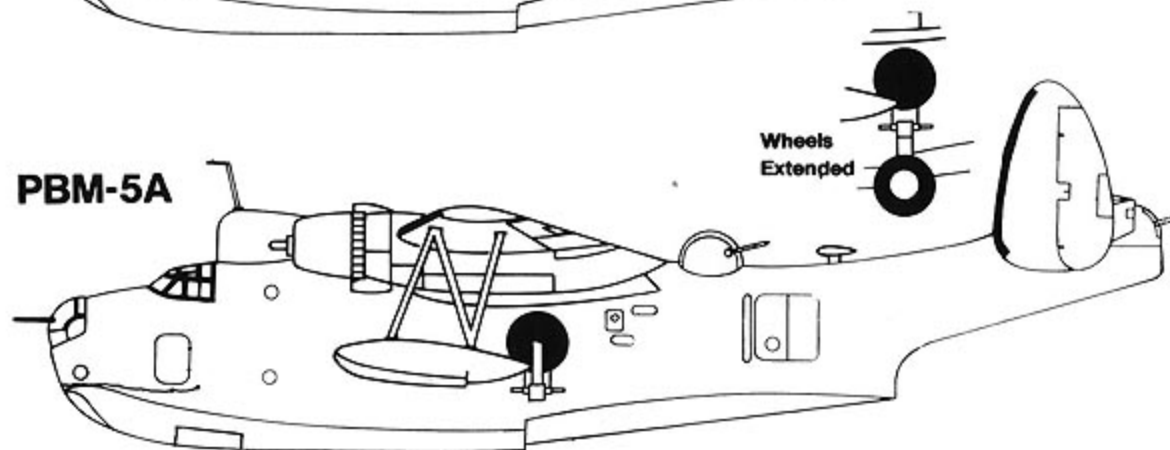
**PBM-3S**



**PBM-5**



**PBM-5A**





# PBM-1 Mariner

Outwardly the PBM-1, except for some contour changes in the turret areas and on top of the hull forward of the tail, was essentially similar to the final version of the prototype. Armament remained at five .50 caliber machine guns, however provisions for the optional nose mounted 20mm canon was deleted.

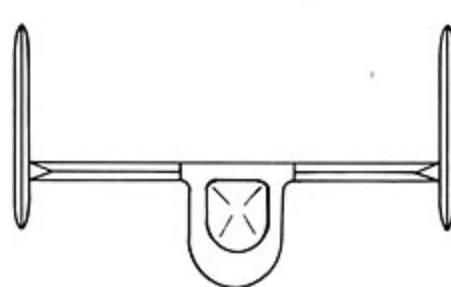
Delivery of PBM-1s to VP-55 began in October of 1940, and to VP-56 in December. By the summer of 1941 all twenty PBM-1s (BuNo 1246 to 1266) had been delivered to VP-55 and VP-56. No better timing could have been selected for the introduction of a new patrol flying boat. Working with PBY Catalina squadrons, training missions were flown by selected crews in near-war conditions in the stormy North Atlantic. Seadromes were established at Argentia, Newfoundland in July and at Reykjavik, Iceland in August of 1941.

The government decided that it would be advantageous for public recognition for aircraft to carry names rather than just military designations. When manufacturers were given the option of choosing a name themselves, or having the Navy choose a name, Martin chose the name Mariner for their PBM.

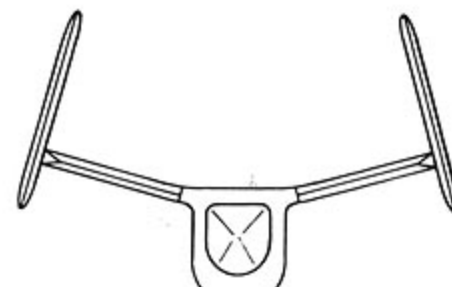
PBM-1s performed outstanding but little known neutrality patrol duty prior to Pearl Harbor. During the summer of 1941 the first British-type 'Ladder' radar, with antennas along the sides of the hulls was installed on a few PBM-1s. VP-55 was redesignated to VP-74, and VP-56 was redesignated Transitional Training Squadron Atlantic (TTSA) at Norfolk, Virginia. Against the recommendation of VP-74's Commanding Officer, LCDR A B Vosseller, the Mariners were kept through the harsh winter months at Reykjavik, with VP-74 suffering their first fatality when a PBM-1 Mariner hit a mountain on 1 November 1941 while trying to find their socked-in base. Catalina squadrons in this area were being

re-equipped with early PBY-5A Catalina amphibians which were better suited for Iceland during the winter.

On 22 January 1942, VP-74 moved south with their PBM-1s for duty in the Caribbean and South Atlantic, with a detachment at Bermuda. This would test the Mariner in a hot and humid environment as far south as Belem and Natal, Brazil.

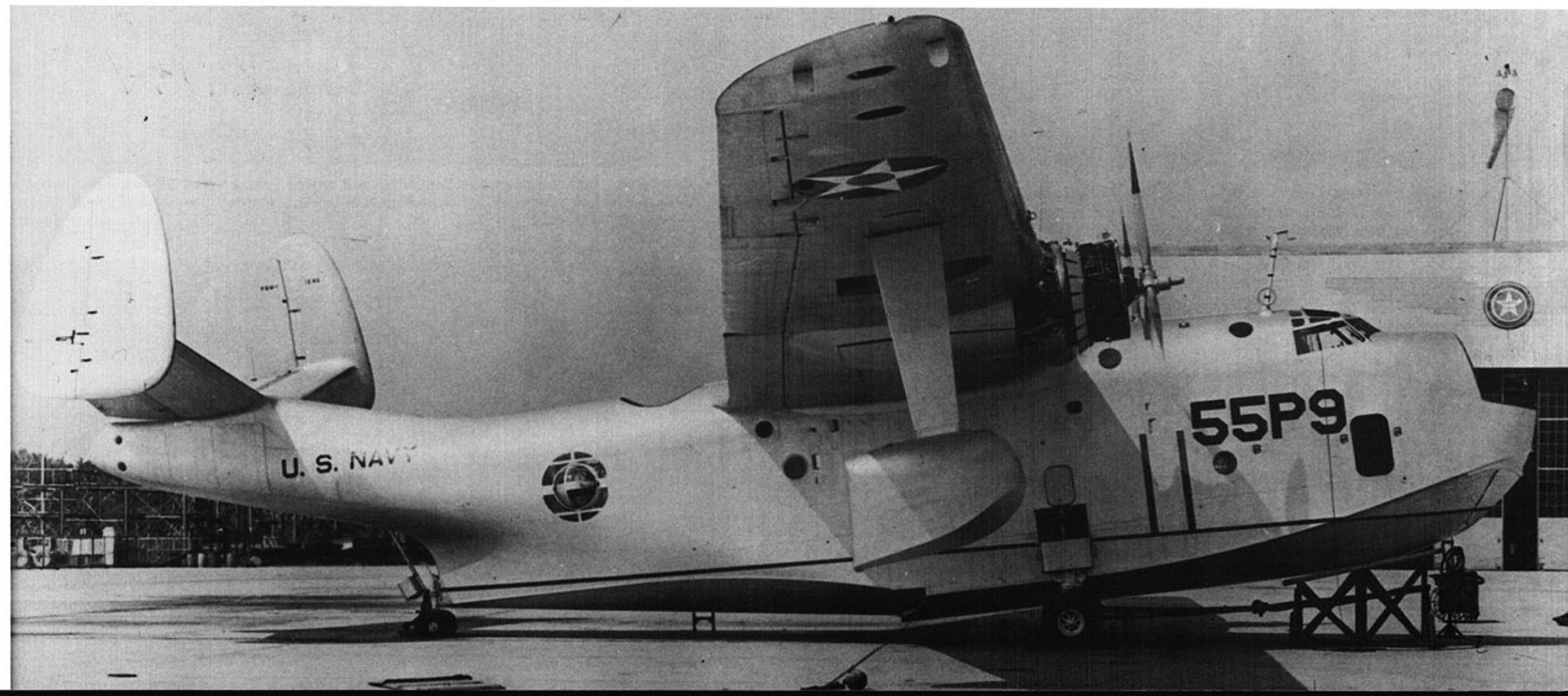


**XPBM-1 (Early)**



**PBM-1**

(Below) All twenty PBM-1s were delivered to VP-55, which later became VP-74, and to VP-56, which became Transitional Training Squadron Atlantic (TTSA) at Norfolk. These two squadrons did not merge as is usually stated. This PBM-1, nearing completion at the Martin Plant, has yet to have the bow turret or engine cowlings installed. The 1,600 hp Wright Cyclone R-2600-6 engine with the short nacelle, retractable stabilizing wing float, and the circular waistgun position can all be seen. (Martin Marietta)





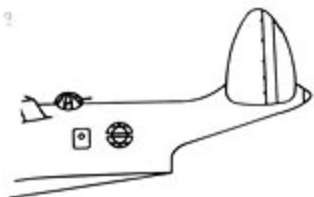


(Above) P7 a PBM-1 of VP-74, flown by Patrol Plane Commander (PPC) LT Joseph Jaap, made an open sea landing off Bermuda on 11 February 1942, to rescue torpedoed tanker survivors. Jaap landed in 12 foot swells to pick up the nine survivors who were hundreds of miles from shore when the Mariner crew spotted their life raft. He was awarded a Distinguished Flying Cross (DFC) for this rescue. Jaap retired as a Rear Admiral. P-7 (BuNo 1260) is seen at its Bermuda base with the survivors being taken ashore. It carries the early war scheme of Non-specular Blue Gray upper surfaces over Non-specular Light Gray lower surfaces. (Smithsonian Institution Photo)

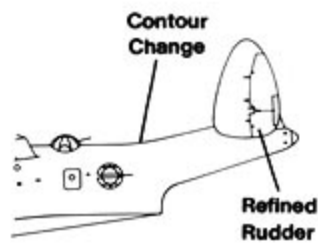
### XPBM-1



### PBM-1



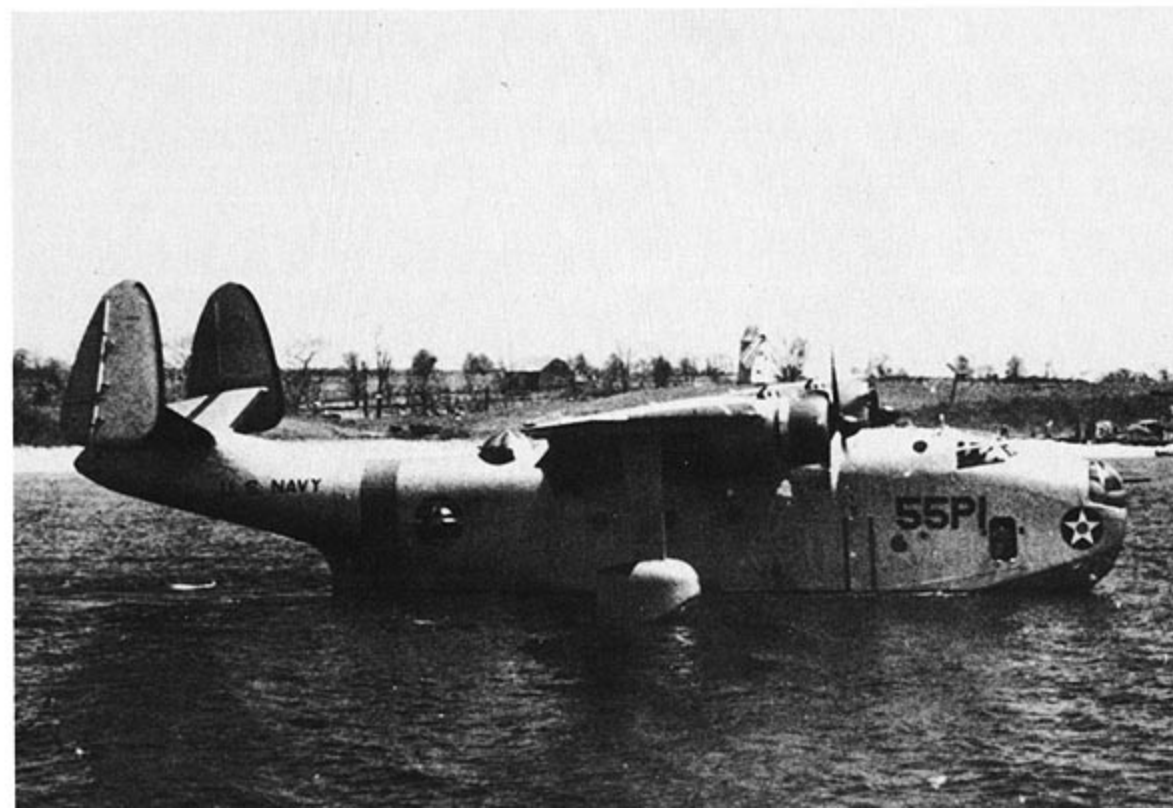
New  
Bow  
Turret



Contour  
Change

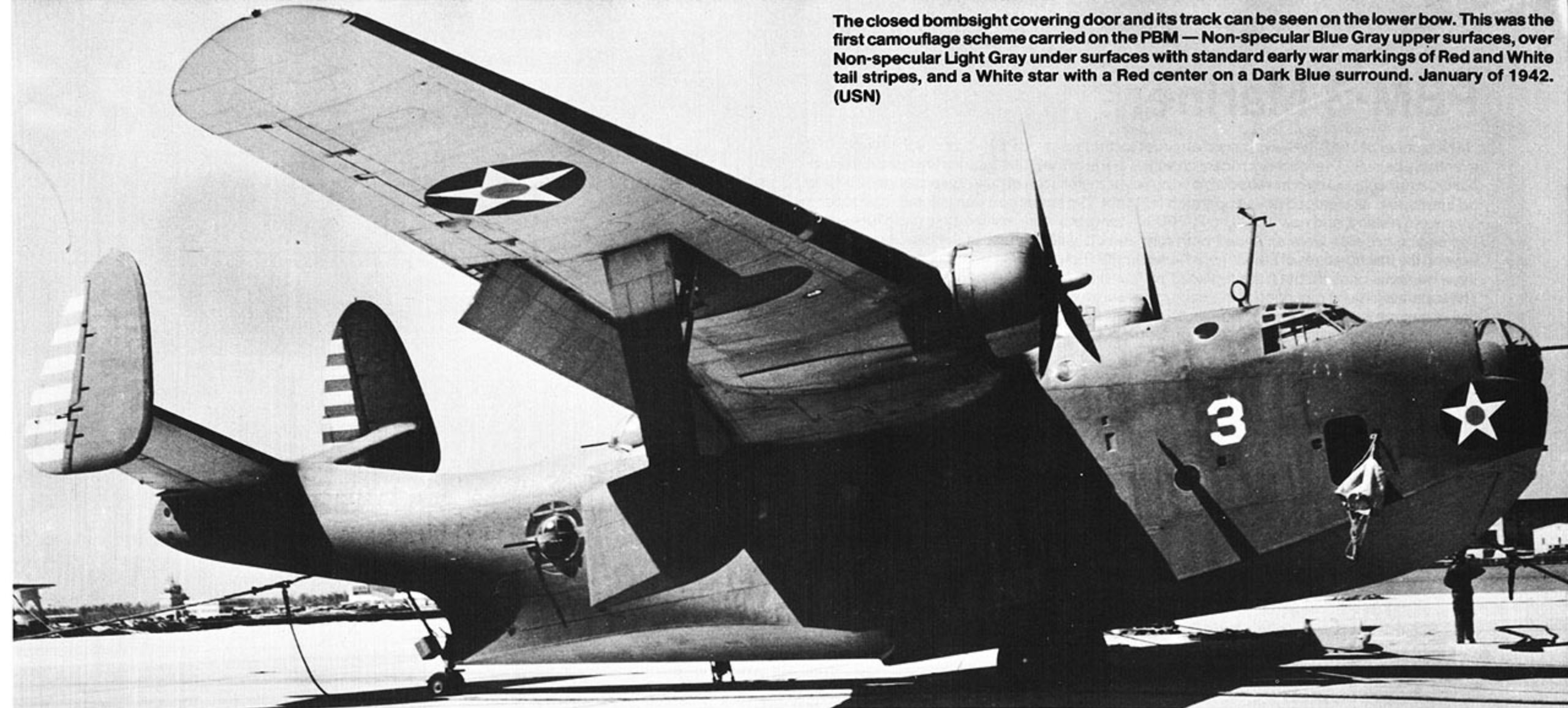
Refined  
Rudder

(Right) LCDR A B Vosseller was CO of VP-55, the first Squadron to receive the Mariner. His PBM-1 carries an Insignia Red band on the aft hull and Red cowlings indicating that this plane was assigned to the commanding officer. (USN)





The closed bombsight covering door and its track can be seen on the lower bow. This was the first camouflage scheme carried on the PBM — Non-specular Blue Gray upper surfaces, over Non-specular Light Gray under surfaces with standard early war markings of Red and White tail stripes, and a White star with a Red center on a Dark Blue surround. January of 1942. (USN)

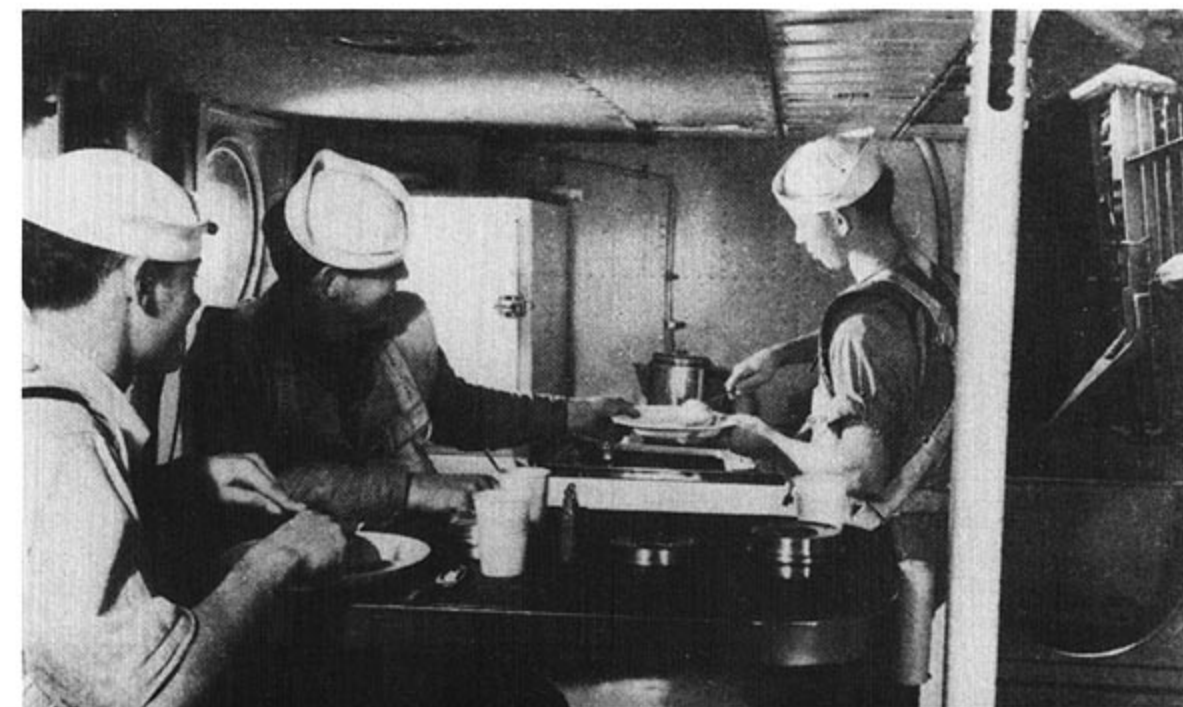


(Below) All Mariners had a galley below the flight deck, complete with a refrigerator and stove. The bow gunner, whose station was adjacent to the galley, often became the chef. (USN)

## XPBM-2 Mariner

The second production PBM-1 (BuNo 1247) became the XPBM-2 prototype. Fuel capacity was increased from 2700 gallons to 4815 gallons, the structure was re-enforced, and attachments for catapult launching were added. Other than these modifications the XPBM-2 was essentially the same as the PBM-1. Production was not instituted and the XPBM-2 was assigned to the Naval Air Material Command at the Philadelphia Navy Yard, being stricken from Navy roles on 30 June 1944.

(Below) The XPBM-2 was successfully catapult tested in 1942 from a catapult installed on Catapult LIGHTER (AVC-1). This vessel was intended as a mobile base for long range patrol planes. The XPBM-2's increased fuel capacity nearly doubled the PBM's range. The catapult was built by the Baldwin Locomotive Works and the Naval Aircraft Factory in Philadelphia. Because of the pressing need for anti-submarine seaplanes, catapult testing did not proceed. (Author)

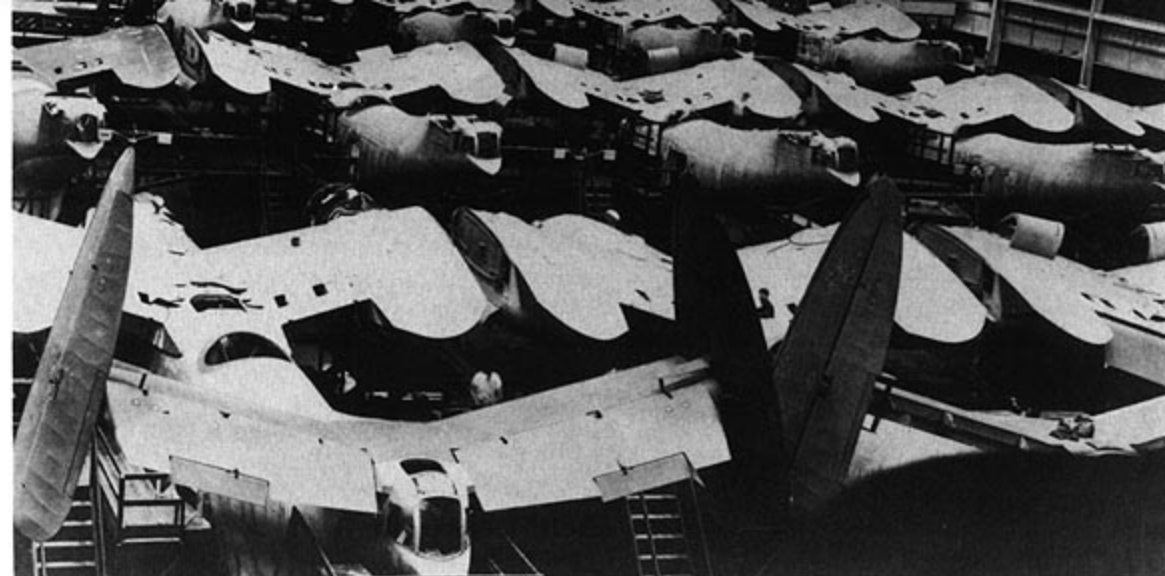




# PBM-3 Mariner

In November of 1940 the Navy placed an order for the improved PBM-3, of which a total of 679 would eventually be built. The most significant changes made to the PBM-3 series were the retractable wing floats being replaced by non-retractable wing floats, installation of new power operated bow and dorsal turrets, and an enlarged power operated tail turret. The tunnel gun was deleted. The upper rear hull lines were revised, and new 1,700 hp R-2600-12 engines were installed in a more forward position. The engine nacelles were extended both fore and aft, with the rear of the nacelles now extending beyond the trailing edges of the wings, which permitted larger bomb bay doors. Early PBM-3s carried three bladed propellers but were replaced by four bladed propellers on later production machines. The separate circular mounting of the waist guns were moved to the waist hatches. A further modification was made to the tail with the addition of four vortex airfoils mounted over and under each stabilizer at the rudder. During the production run a number of PBM-3s had cooling fans installed on the engines.

All PBM-3s were purpose-built Mariners with suffix letter designations and equipped to carry out specific tasks.

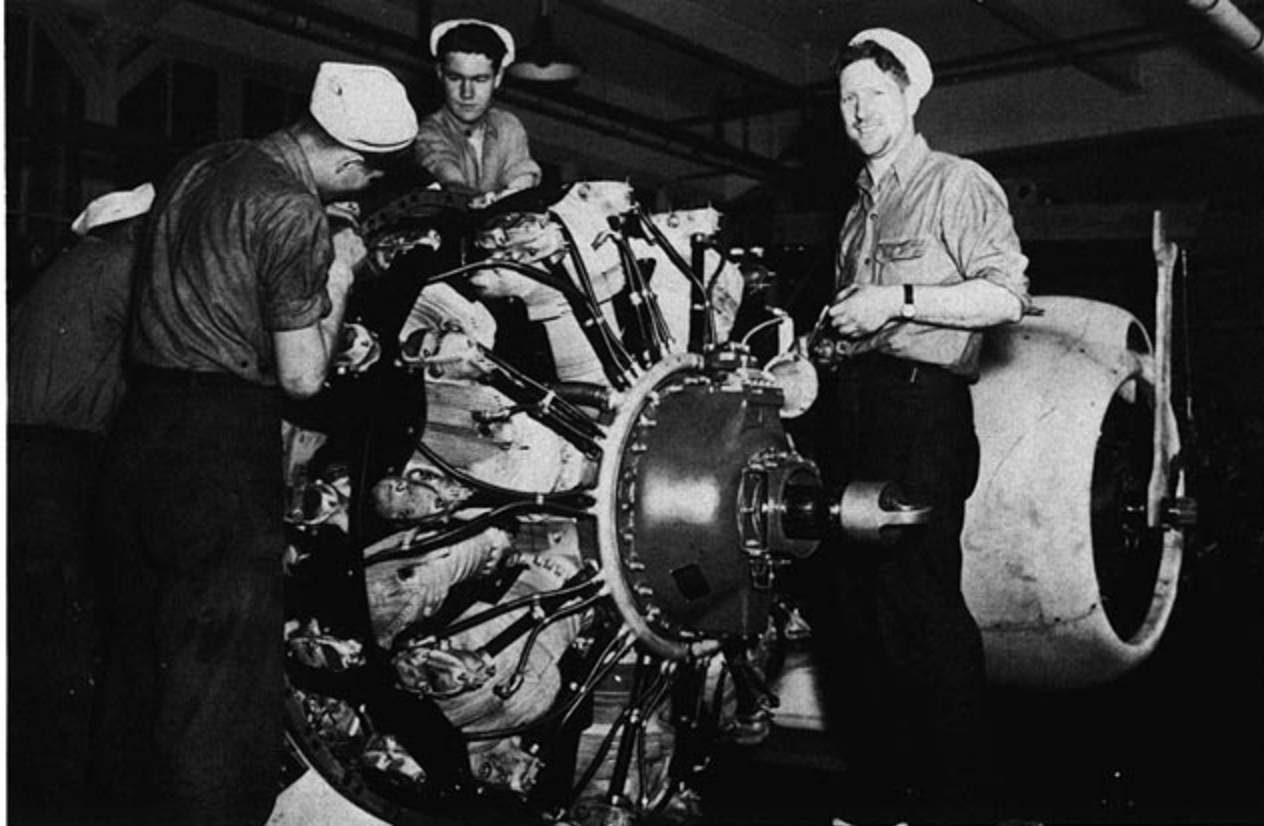


(Above) PBM-3 Mariners during construction at the Martin plant. (Smithsonian Institution)

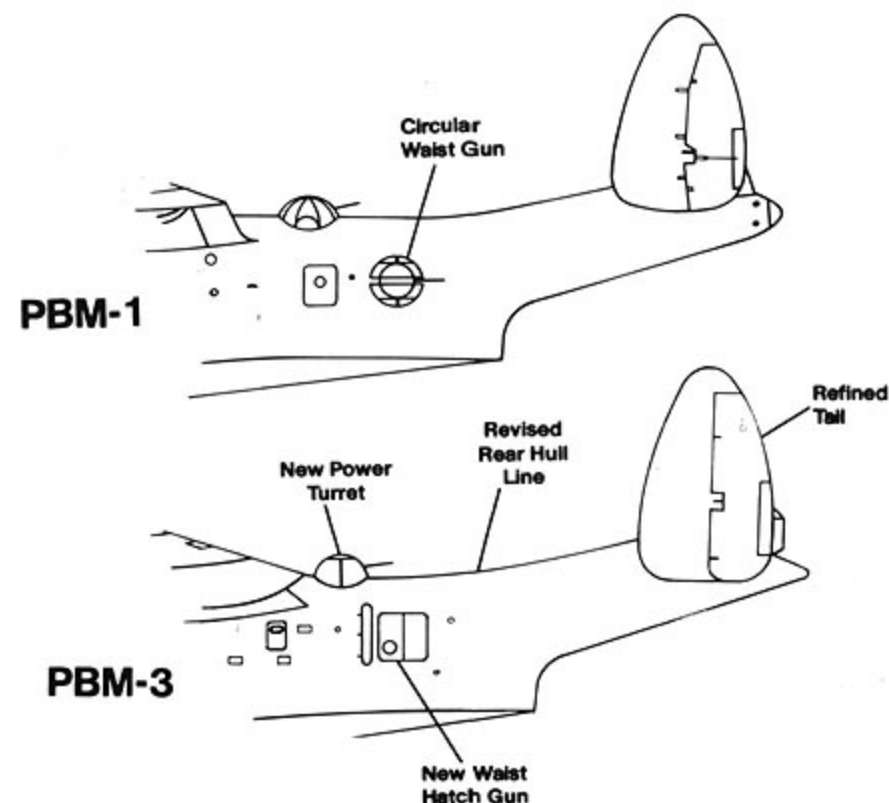
(Below) An early PBM-3 making a picture-perfect takeoff. After the initial test flight of the PBM-3, Martin's chief test pilot, Ken Ebel, who had been at the controls, exclaimed upon landing, "Mister, we've got a flying boat". (USN)





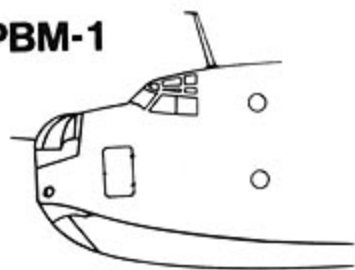


(Above) The PBM Mariner was designed with the Wright Cyclone R2600 as its power plants. The XPBM-1 and PBM-1 were powered by an R2600-6 (1600 hp), the PBM-3, 3B, 3C, 3R and 3S were powered by the R2600-12 (1700 hp), and the PBM-3D used R2600-22 (1900 hp). This Wright Cyclone R2600-12 engine is under repair at VR-8's engine rework facility at Patuxent River. (Martin Marietta)



(Below) The radioman and navigator are at their work stations and two pilots are in the cockpit. The crew stations, including the cockpit, were spacious and comfortable in the Mariner. A normal flight crew for PBMs during the early war was three pilots and six aircrewmen. A seventh crewman was added when radar was installed. Early PBM-3s did not have radar unless retro-fitted with it. Mariner crews normally consisted of three pilots: a patrol plane commander (PPC), and two first or second pilots who were cross-trained for bombardier and navigational duties. (Smithsonian Institution)

PBM-1



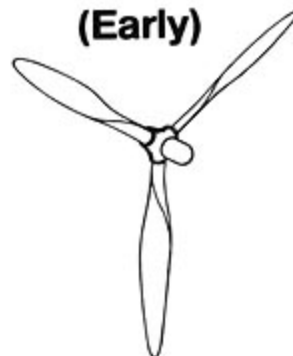
PBM-1

R-2600-6 Engines



Retractable  
Floats

PBM-3  
(Early)



PBM-3

R-2600-12 Engines



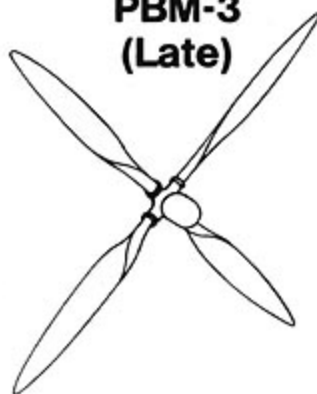
Oil Cooler

Extended  
Rear Engine  
Nacelle

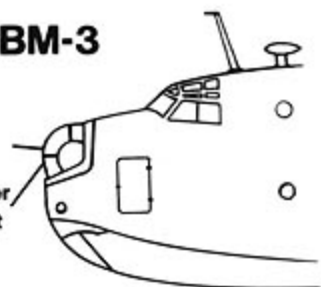
New Bomb-bay  
Doors

Non-Retractable  
Floats

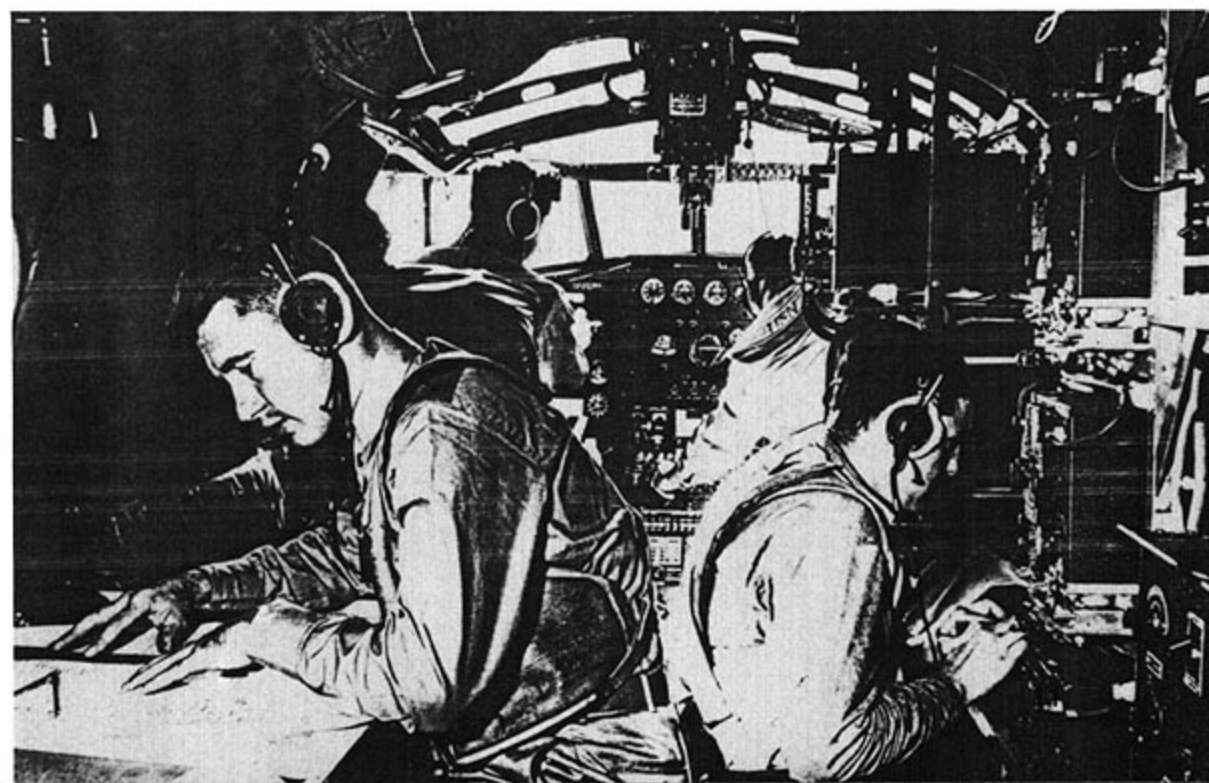
PBM-3  
(Late)



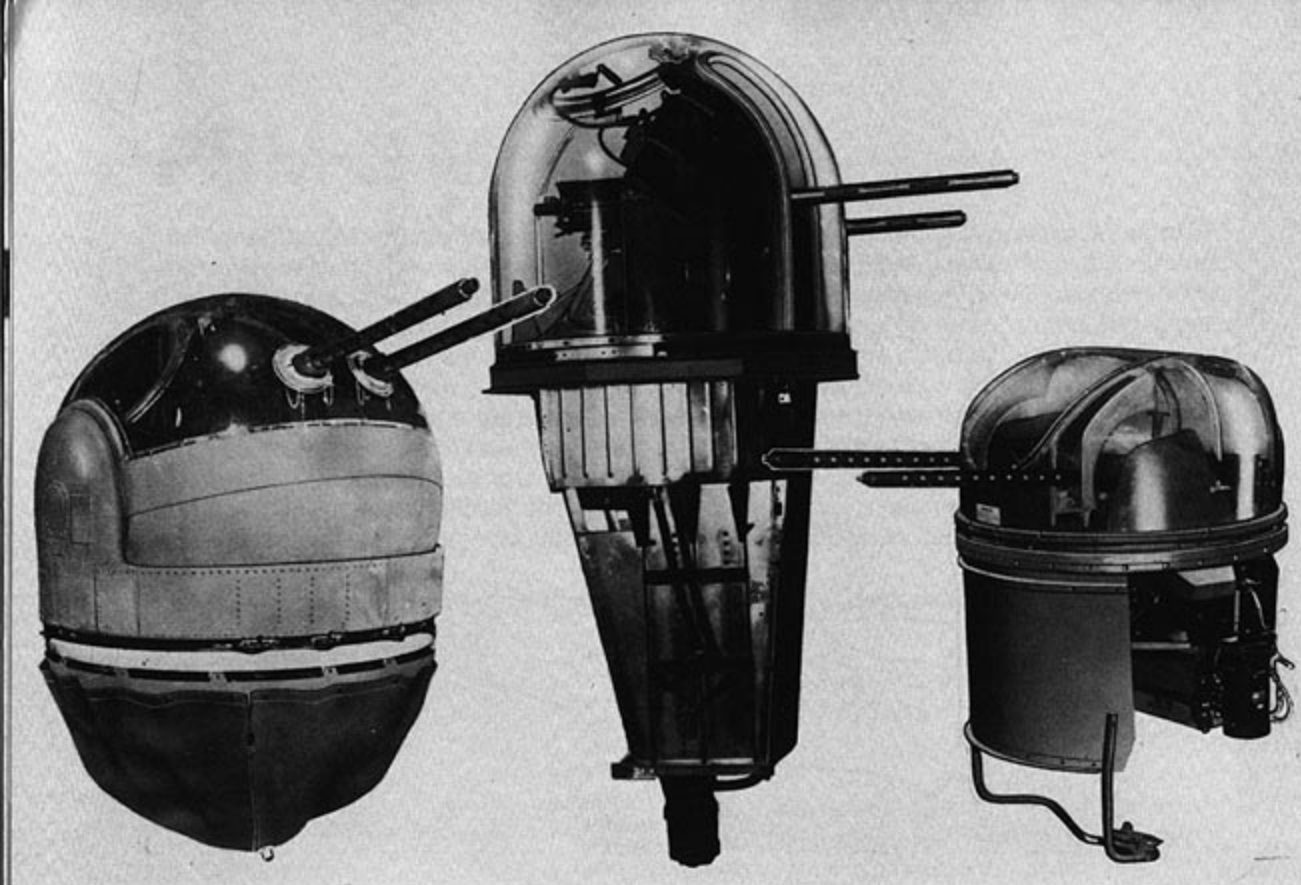
PBM-3



Power  
Turret

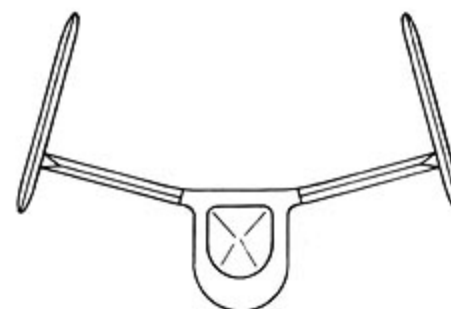




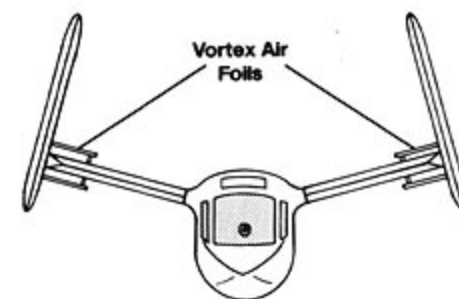


(Left) The Mariner's bow turret (left) had an escape hatch in the top. The deck turret (center) contained a ladder in the base for entry and exit, and provided the gunner excellent visibility. The deck turret at the right was not used on PBM-3s. (Martin Marietta)

### Shannon Vortex Airfoils

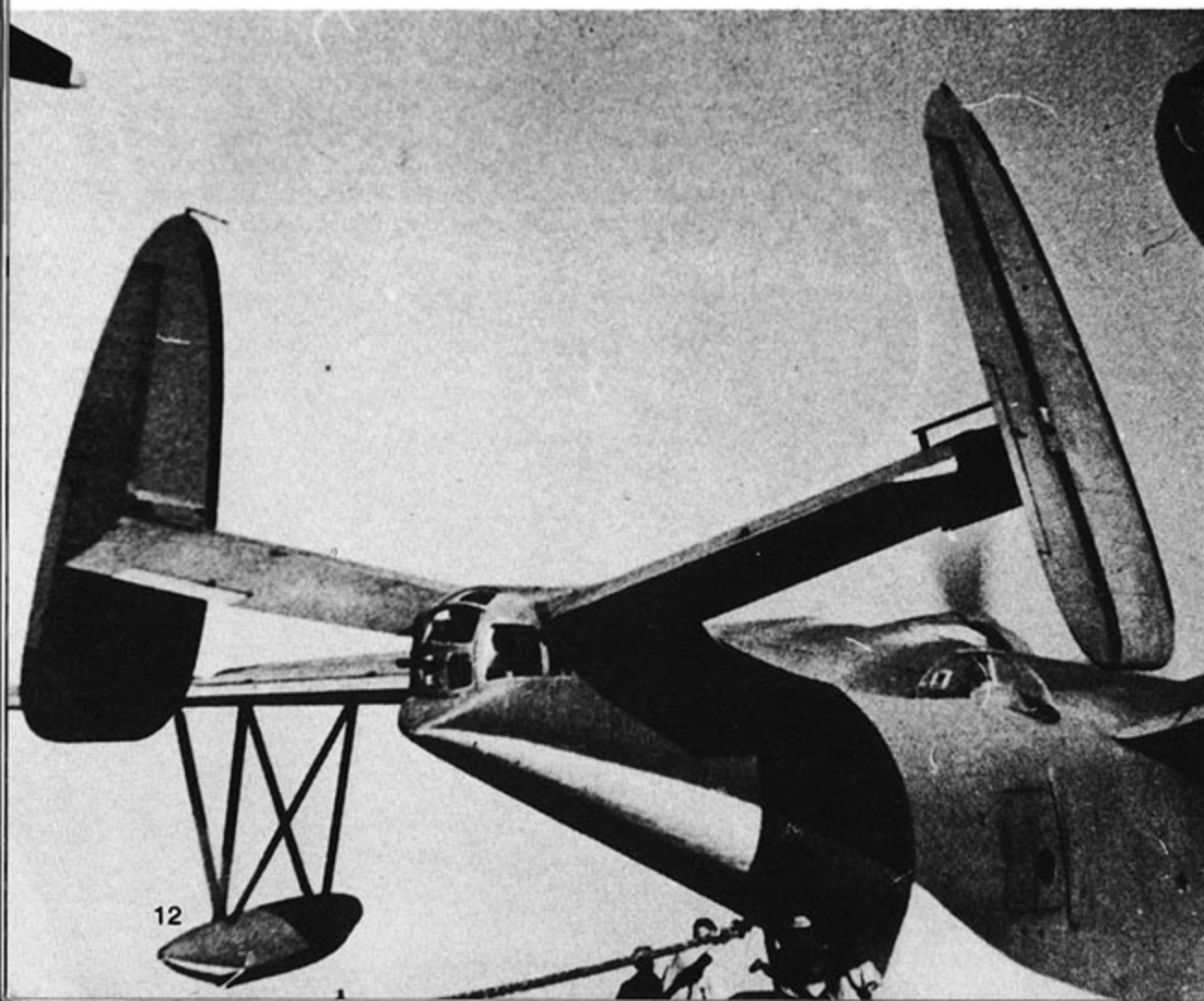


PBM-1



PBM-3

(Below Left) Vortex airfoils were added to the PBM-3's horizontal stabilizer to further 'fix' the tail problems that had plagued the Mariner. This fix consisted of four airfoils mounted over and under the horizontal stabilizer at the vertical fin, and was designed by Ellis (Sam) Shannon, a Martin test pilot. Shannon was enrolled in the 'Order of Purple Martin' for this device, which was the highest honor bestowed by the Glenn L Martin Company in the field of scientific accomplishment. (USN)



(Below) The Naval Air Station at Banana River, Florida, with its ideal climate, wide river and proximity to Key West, Guantanamo Bay, San Juan, etc., provided a superb transitional training facility for Mariner crews. Three of the four planes at anchor in the river are PBM-1's with their floats down, and the one on the ramp is an early PBM-3 equipped with a three-bladed propeller, no radome, and a single gun in the tail. The Insignia indicates that this is probably during early 1942. (Martin Marietta)







## PBM-3R Transport Mariner

The first fifty production PBM-3s, stripped of armor, were equipped and delivered as transports under the designation PBM-3R (BuNo 6455 to 6504) with deliveries beginning during the fall of 1942. Reinforced flooring, cargo doors, and hoists, were added and optional seating was provided for up to twenty passengers, although Mariners were often configured to carry up to thirty-three passengers. Power was provided by a pair of 1,700 hp R-2600-12 engines turning four bladed propellers.

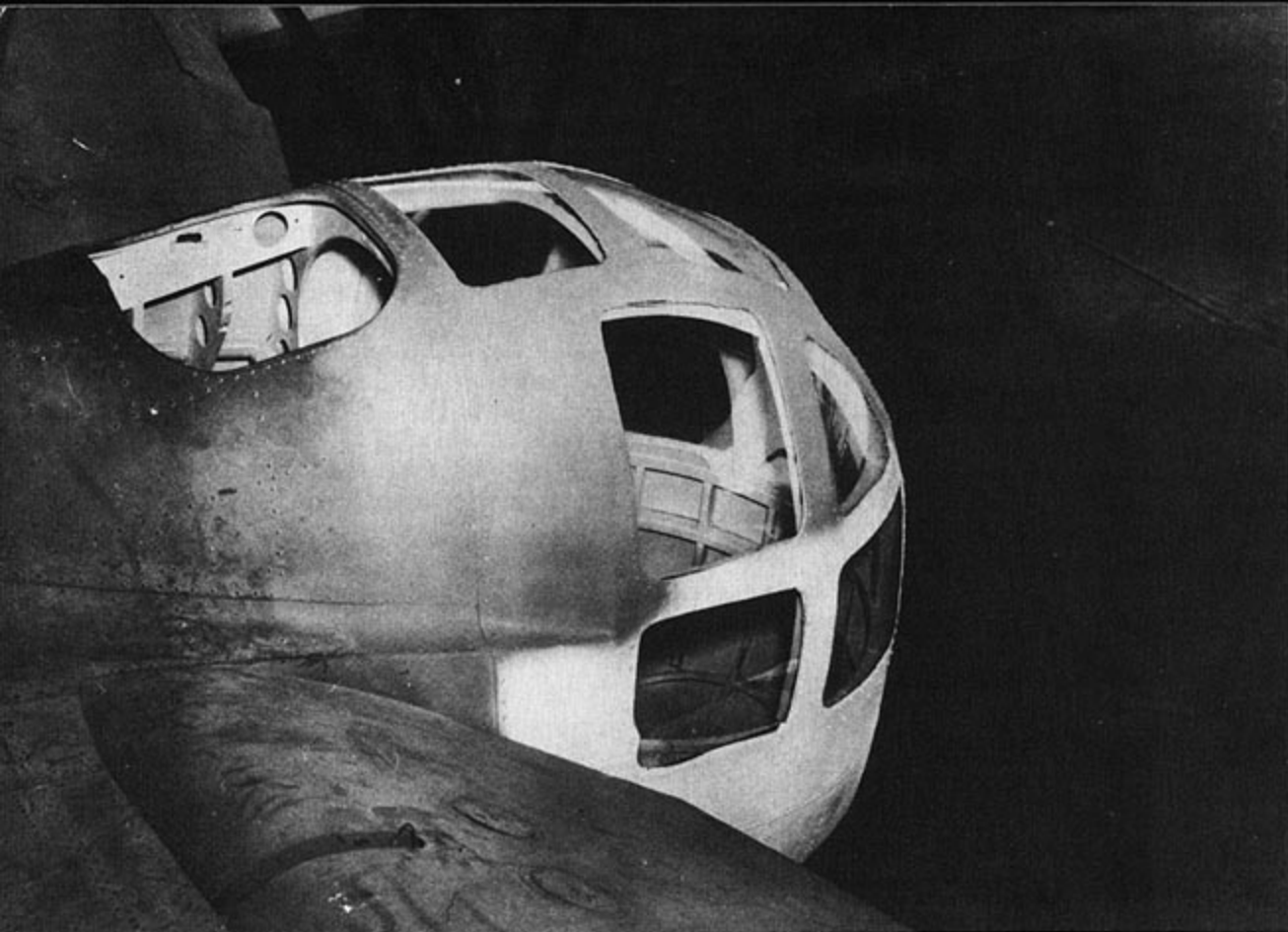
Serving with Naval Air Transport Service (NATS), PBM-3Rs were often flown by former airline pilots. NATS Mariners of VR-1 were based at Pan Am's Dinner Key Base, Miami, Florida, VR-8 at Patuxent River, Maryland, and VR-2 at Alameda, California. VR-10 was rushed to the Pacific to help establish the Southwest Pacific routes westward from Hawaii into the Southwest Pacific, New Zealand and Australia. The Royal Australian Air Force received twelve PBM-3R Mariner transports in 1943 (RAAF A-70-1 to A-70-12).

**(Left) The PBM-3R was stripped of all armament and outfitted as a transport. This unidentified PBM-3R Mariner transport makes a colorful take-off. (USN via Brucia)**

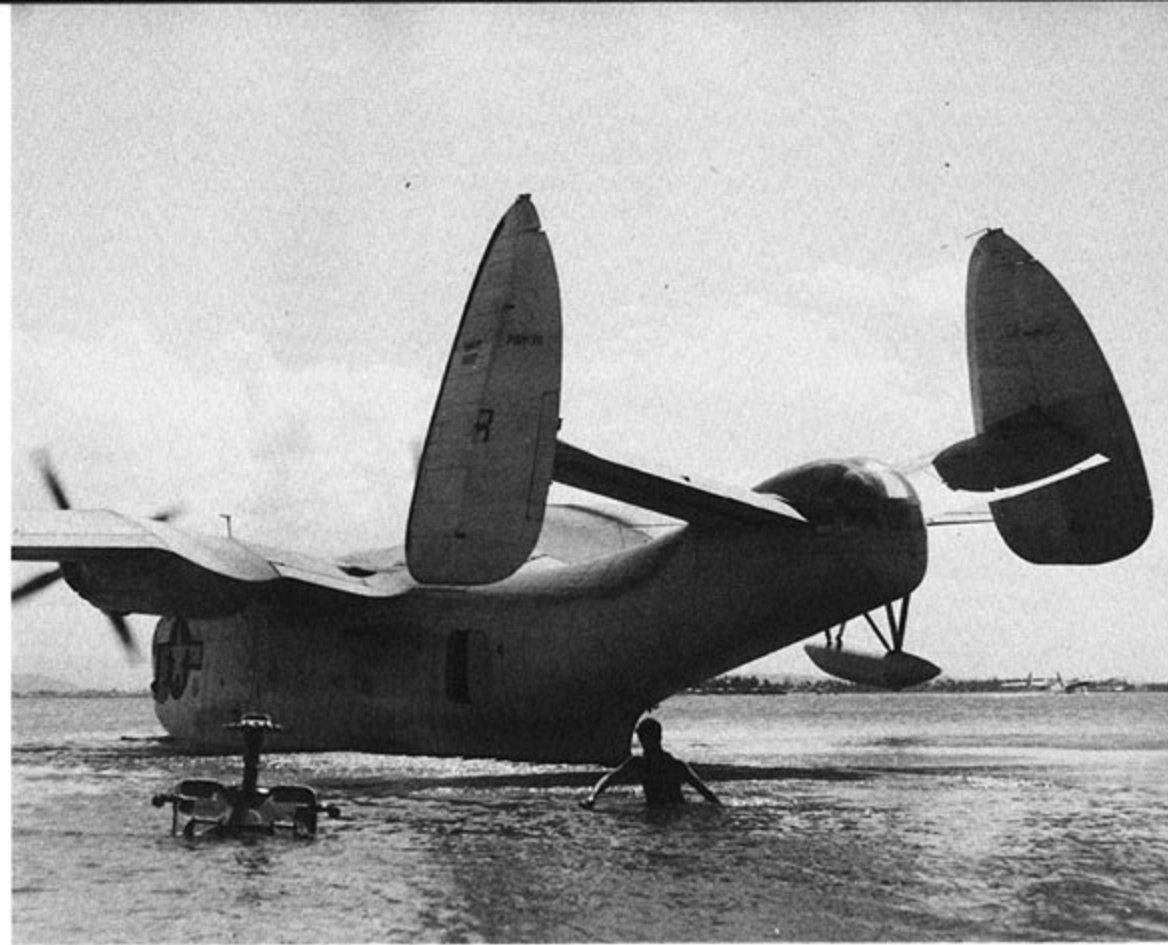
**(Below) This PBM-3R Mariner transport is docked at San Juan, Puerto Rico in 1944. The Plane Commander was LT Mike Burns. In a color scheme similar to British Mariners it carries White lower surfaces and Gray upper surfaces. (Stevenson)**



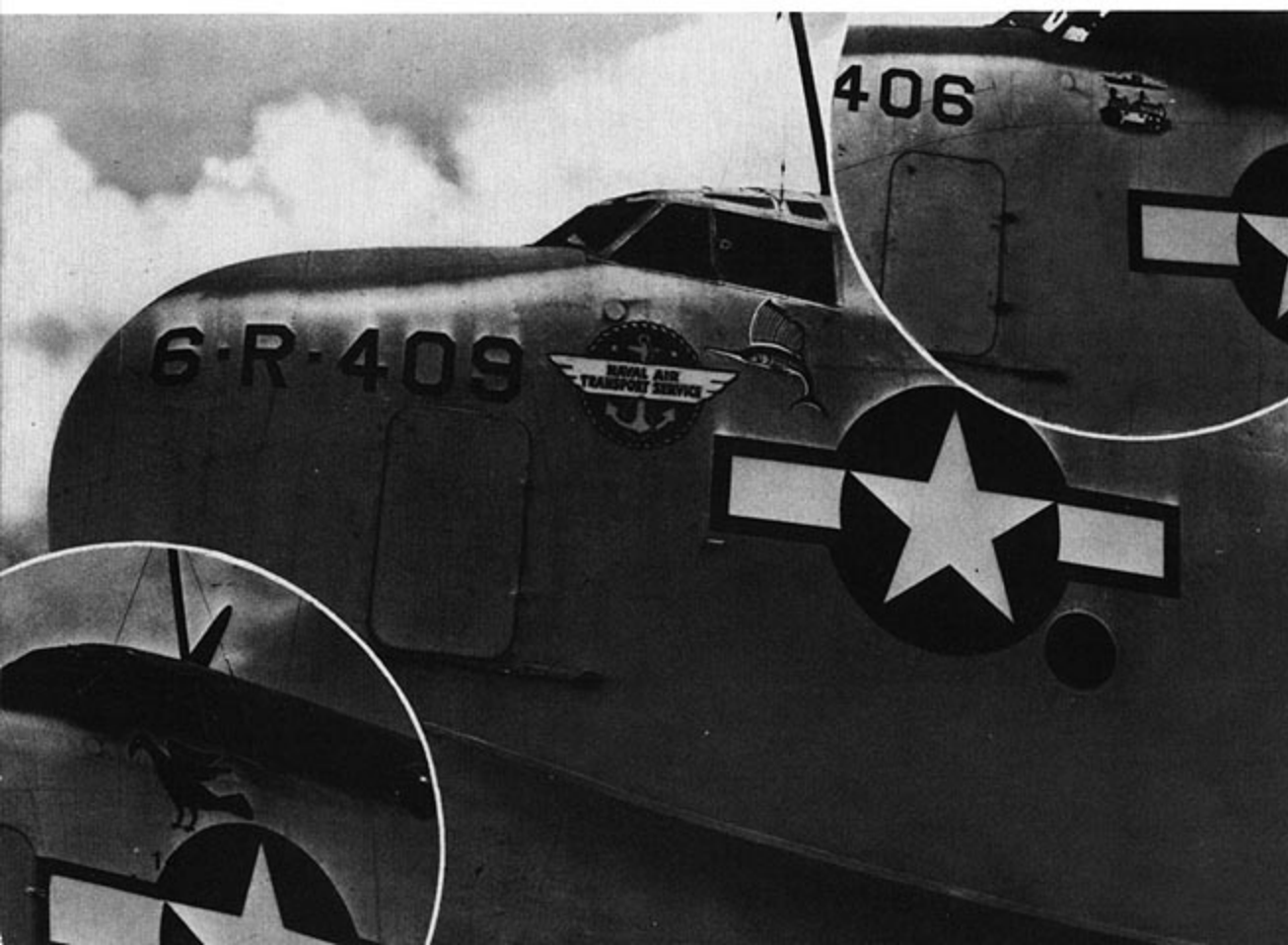




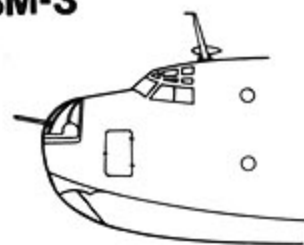
(Above) The PBM-3R tail enclosure without armor or armament during construction. (Smithsonian Institution)



(Above) This PBM-3R, assigned to VR-8 and flown by LT Mike Burns, is anchored at San Juan in 1944. (Stevenson)

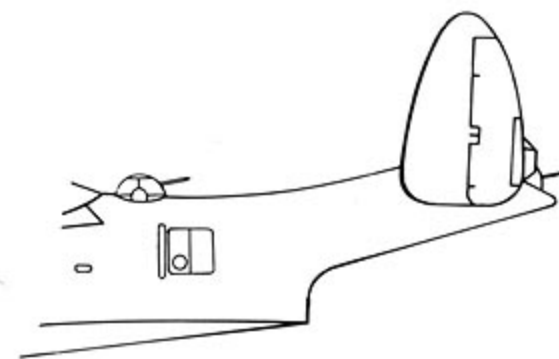


PBM-3

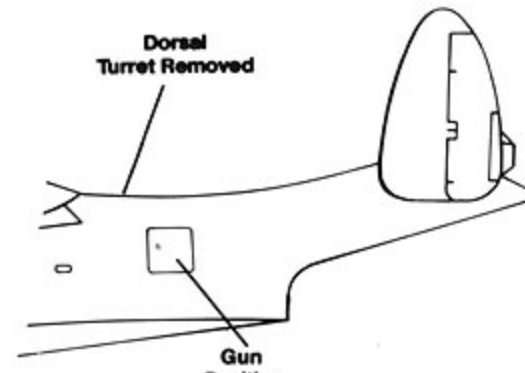


PBM-3R

Faired  
Nose



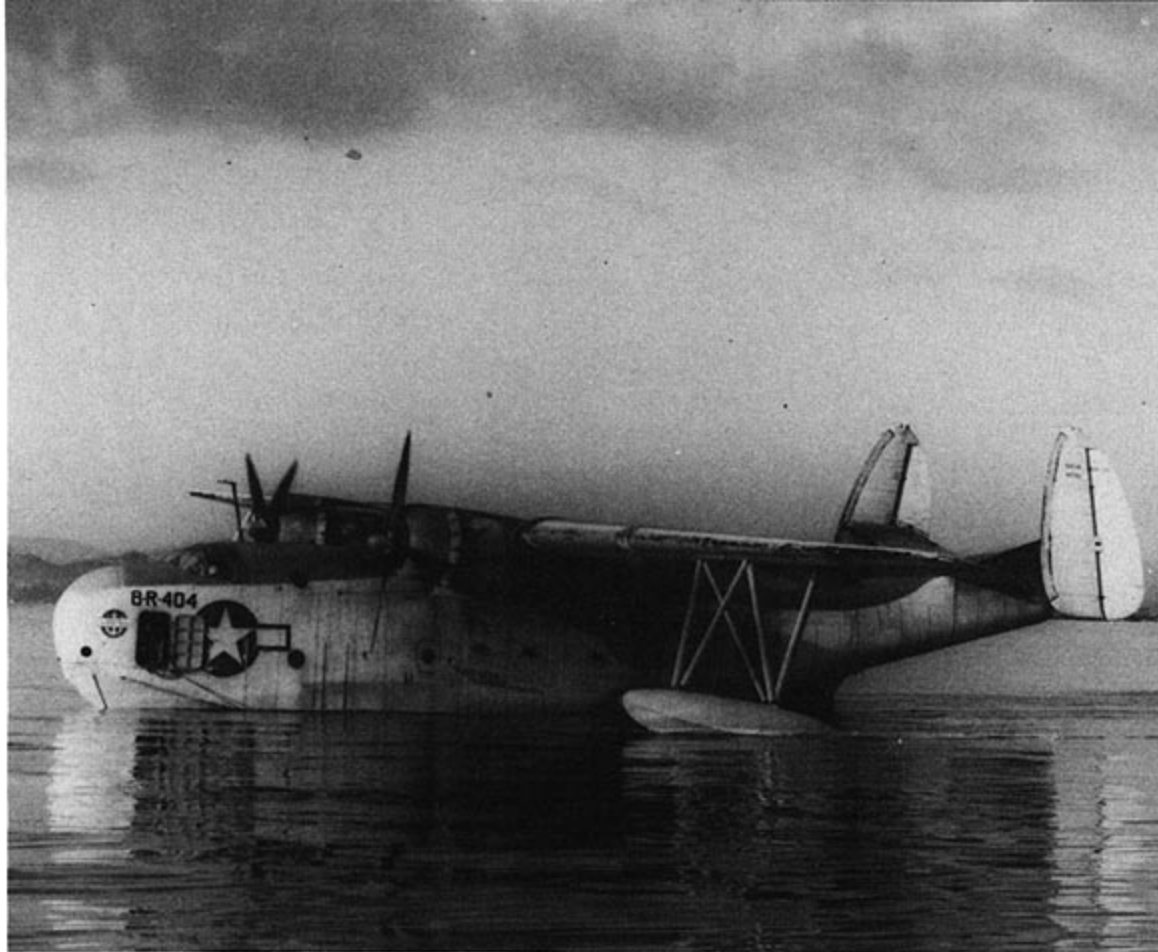
Dorsal  
Turret Removed



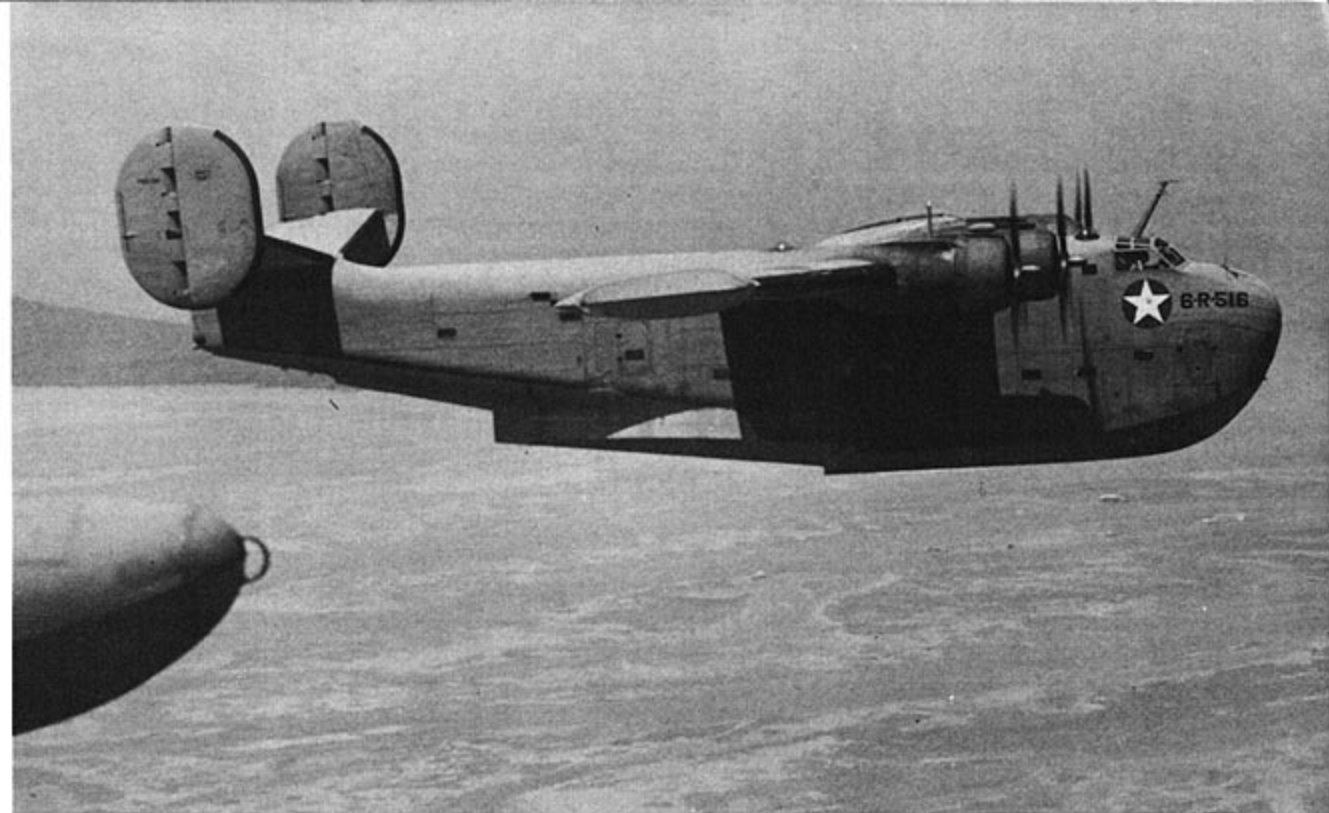
Gun  
Position  
Removed

(Left) Three PBM-3R Mariners of VR-6, numbers 402, 406 and 409, with each carrying its own individual nose art. (Martin Marietta)



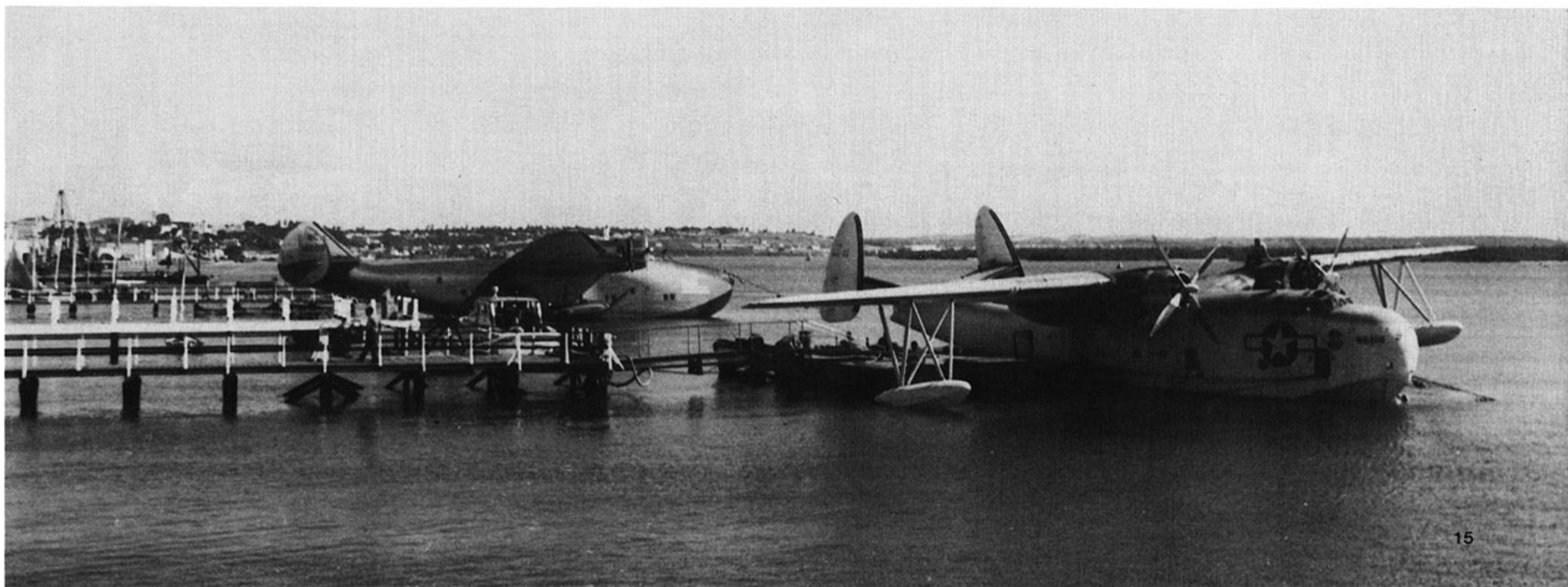


(Above) This PBM-3R transport of VR-8, flown by Plane Commander Mike Burns, prepares to taxi to a buoy at San Juan at the Naval Air Station Puerto Rico. (Stevenson)



(Above) This PB2Y-3R Coronado, flown by Plane Commander LT Mike Burcham, flies in formation with LT Jim Stevenson's PBM-3R. A number of PB2Y-3R Coronados and a few Boeing 314s supplemented the more numerous PBM-3R Mariners on the NATS routes in the South Atlantic as well as in the Pacific. (Stevenson)

(Below) These two NATS flying boats, a Pan Am Boeing 314 and a PBM-3R Mariner, are docked at Natal, Brazil. The Boeing 314 carries an American flag on the bow.





## PBM-3E Electronic Mariner

The second production PBM-3 (BuNo 6456) had an AN/APS-15 search radar installed and was redesignated XPBM-3E (E for Electronics). PBM-3Cs received this radar installation.

## PBM-3C Mariner

First Appearing in September of 1942, 374 PBM-3Cs were built (BuNo 6506 through 6754, and BuNo 01650 to 01673). Crew armor was increased, the tail gun position was improved, and twin .50 caliber machine guns were mounted in the nose and dorsal positions, increasing defensive armament to seven machine guns. Some PBM-3Cs were equipped with search radar mounted in a large housing atop the spine of the hull just behind the cockpit. The PBM-3C was powered by a pair of 1,700 hp R-2600-12 engines turning four bladed propellers.

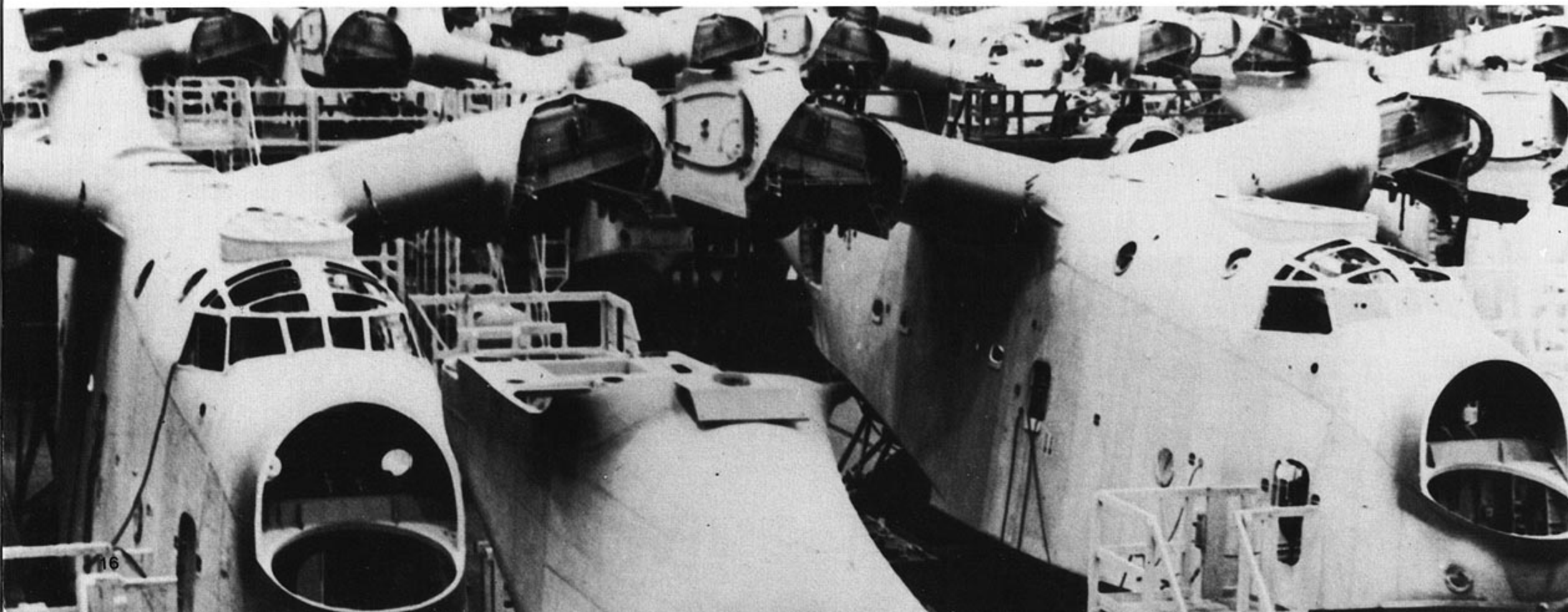
PBM-3Cs were delivered to Atlantic Squadrons during early 1943 as German U-boats, rather than suffer attacks from the air while submerged, began to surface for shootouts with aircraft. Expecting to tangle with relatively weak patrol aircraft encountered during the early war months, they found the PBM's seven .50 caliber machine guns more than they bargained for. Ten Nazi submarines were sunk by Mariners off the American coast and in Caribbean waters during 1942-43.

Since U-boats usually surfaced at night to re-charge their batteries, VP-201 began testing the L-8C searchlight during the fall of 1943, with most squadrons eventually being trained to use this searchlight.



(Above) Mariner crews in the Caribbean seldom complained of their duty stations. This rather placid scene reflects little of the turmoil of a world at war, of which it was on the fringe. (USN via Doll)

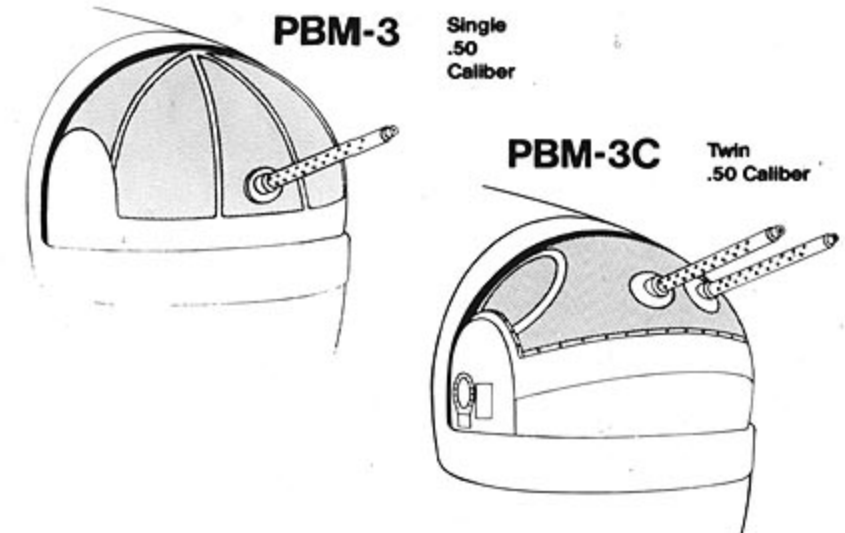
(Below) Twin .50 caliber machine guns replaced the single .50 in the PBM-3C turret. The large radome mount added to the PBM-3C can be seen just behind the cockpit. Martin's publication, *THE STAR*, stated that this was the largest airplane assembly floor in the world. (Smithsonian Institution)







(Left) VP-74's famous 'Nickle Boat', a PBM-3C, is seen at the Martin plant while being refurbished and updated after she had assisted in two U-boat sinkings. The first was on 17 May 1943 with LT JG Harold Carey as PPC (later posted missing in action while on a later Mariner mission). The second was on 19 July 1943 with LT JG Roy Whitcomb as PPC. During the second attack, the famous U-boat commander, Kapitänleutenant Guggenberger, who had sunk the HMS Ark Royal, was captured along with six other survivors. Seen examining the *NICKLE BOAT* are crew members and Maurice Lagrand, a Martin assembly supervisor. (Maurice Lagrand)

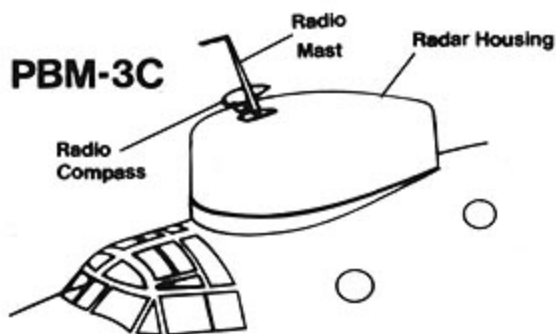


## RADAR HOUSING

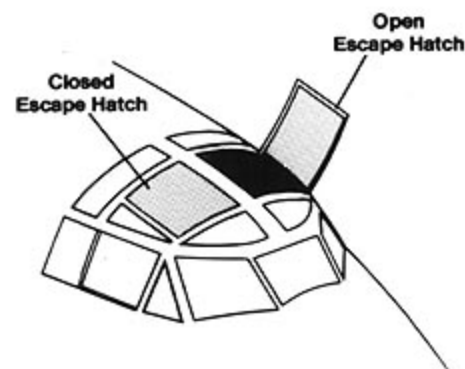
### PBM-3



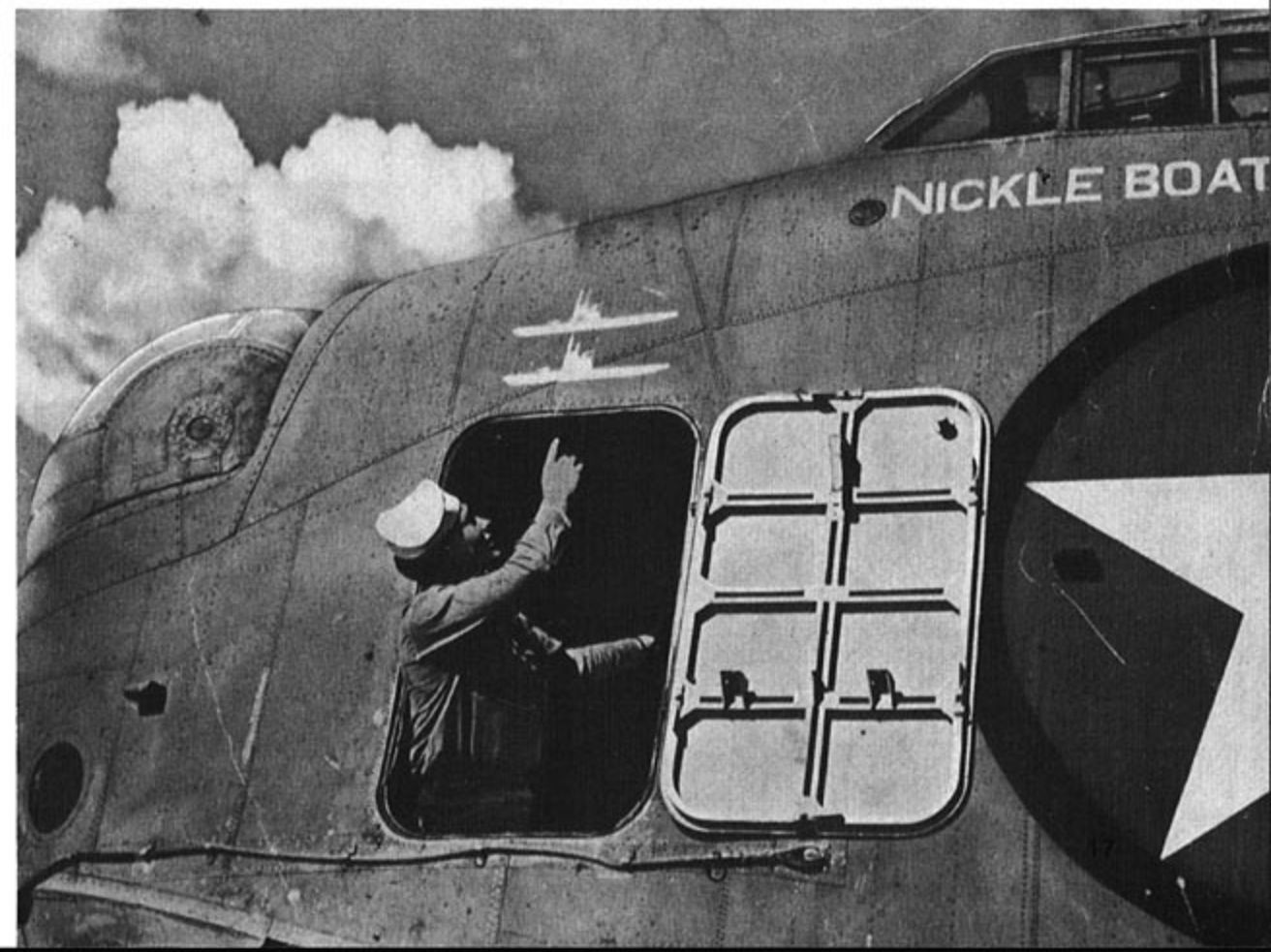
### PBM-3C



## CANOPY



(Right) The *NICKLE BOAT* carried a pair of White submarine kill marks with Black swastikas in White circles on small Red squares on the conning towers. The standard Atlantic scheme of Non-specular Blue Gray over Non-specular Light Gray was carried on the *NICKLE BOAT*. (Martin via Richard Lagrand)







(Above) PPC Howland Davis and Harold 'Hog' Carey of VP-74, flying PBM-3Cs, teamed up to sink a U-boat on 17 May 1943.(Mahoney)

(Below) PPC LTJG R S Witcomb of VP-74 in a PBM-3C sank a U-boat on 19 July 1943. (Mahoney)



## PBM-3B (Mariner G.R. Mk 1)

Thirty-two PBM-3Cs were modified for Great Britain under the designation PBM-3B and supplied under the Lend-Lease program. The British designated them Mariner G.R. Mk I (JX-100 to JX-131), with the initial machines arriving in August of 1943. All were assigned to a specially formed Coastal Command squadron. While in British service the Mariner carried standard Coastal Command colors of over-all White with Grey upper surfaces. Five of the surviving boats were returned to the US Navy in 1944. Twelve of these Mariner G.R.1s were sent to the Royal Australian Air Force (RAAF) and used by No. 41 Squadron.



(Above) The Mariner, like the Catalina, was 'Lend-Leased' to the United Kingdom during the desperate years of 1942-43. Unlike the Catalina which was used in great numbers by the British, the Mariner was flown for only a few weeks by the British during the fall of 1943, but was never actually deployed. Deliveries began in August of 1943, at Beaumaris Anglesey. Operational Training Squadron No. 524 was set up on 20 October at Oban and disbanded on 7 December 1943. (Martin Marietta)

# PBM-3D Mariner

PBM-3C (BuNo 6656) served as the prototype for the 300 production PBM-3D Mariners built (BuNo 45205 to 45404 and BuNo 48124 to 48223). The PBM-3D was powered by a pair of up-graded 1,900 hp R-2600-22 engines driving new four bladed propellers. Unfortunately the R-2600-22 engines had faulty valve seats which would plague the PBM-3D until all of the early engines were changed out. Intended to take part in the Pacific Theater island assaults, it had increased armor protection for the crew and maring self-sealing fuel cells. Armament of eight .50 caliber machine guns was provided, two in the nose position, two in the dorsal position, two in the tail position, and one at each waist position. Offensive load remained flexible with the ability to carry eight bombs of 500 to 1600 pounds, or eight 325 to 650 pound depth bombs, or four mines. A Mark XIII torpedo could be carried under each wing between the hull and engine nacelle. A number of PBM-3Ds had cooling fans added to their R-2600-22 engines.

The first PBM-3Ds were delivered to VP-202 at Breezy Point, Norfolk, Virginia during the fall of 1943. Trading their PBM-3S anti-submarine Mariners for the PBM-3D, VP-202 was rushed to the Pacific over the New Year, to become the first Mariner squadron based in the South Pacific. VP-16 and VP-216 (the author's squadron) were the second and third Mariner squadrons in the Pacific, arriving in time for the invasion of Saipan. Several other PBM-3D equipped squadrons arrived after July of 1944.

PBM-3D Mariners were initially tended by seaplane tenders about three miles off shore. Swells at that distance from shore sorely tested the hulls of the heavily laden Mariners as they took off. Saipan's Tanapag Harbor seaplane base was captured on 10 July, almost three weeks after VP-16 had made the first off-shore flights.

Saipan became the Sea Base for Combat Aircraft Service Unit F (CASU-F), which was the largest base west of Kaneohe, Hawaii. It was ideally located to service the Central and Northern Pacific assaults. On any given day you could see three Navy seaplane types, the PBY Catalina, the PB2Y Coronado, and during this the last year of the war the vast majority were Mariners. From the Saipan Sea Base the largest seaplane operation in history would be staged to Kerama Retto, Okinawa, beginning on 19 March 1945.

(Below) The author was a co-pilot on this PBM-3D (BuNo 45255) of VPB-216. The boat left the beaching facilities at Kaneohe, Hawaii in June of 1944, participated in the Saipan assault patrols, and then moved to Kossol Passage (Palau) in September. On 7 November, she escaped a Palau area typhoon by being one of five boats flown to Manus Island. While at Saipan the author asked some 'artists' in Crew 5 to paint a shark's mouth on the bow. This may have been the only sharkmouth ever painted on a Mariner. LT Jim Wood was PPC of Crew 5. (Author)

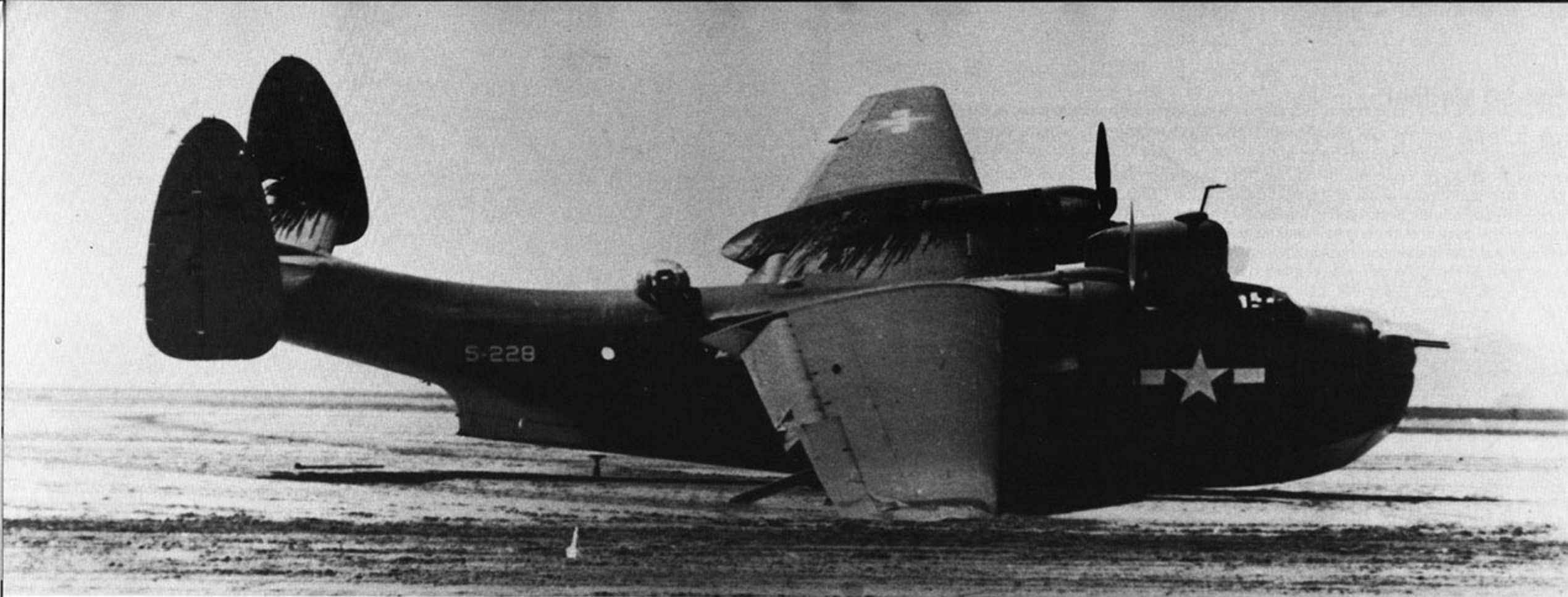


(Above) Bullet proof Martin-built fuel cells, which were first installed in PBM-3Ds, added immensely to the Mariner's survivability. (Martin)

(Below) PBM-3D of VP-21 enroute to Kossol Passage on 20 October 1944. Although the manual claimed the PBM-3D would fly on a single engine, VP-21 had five ships go down on single engines, fortunately all of the crews were saved. (Fred C. Dickey)





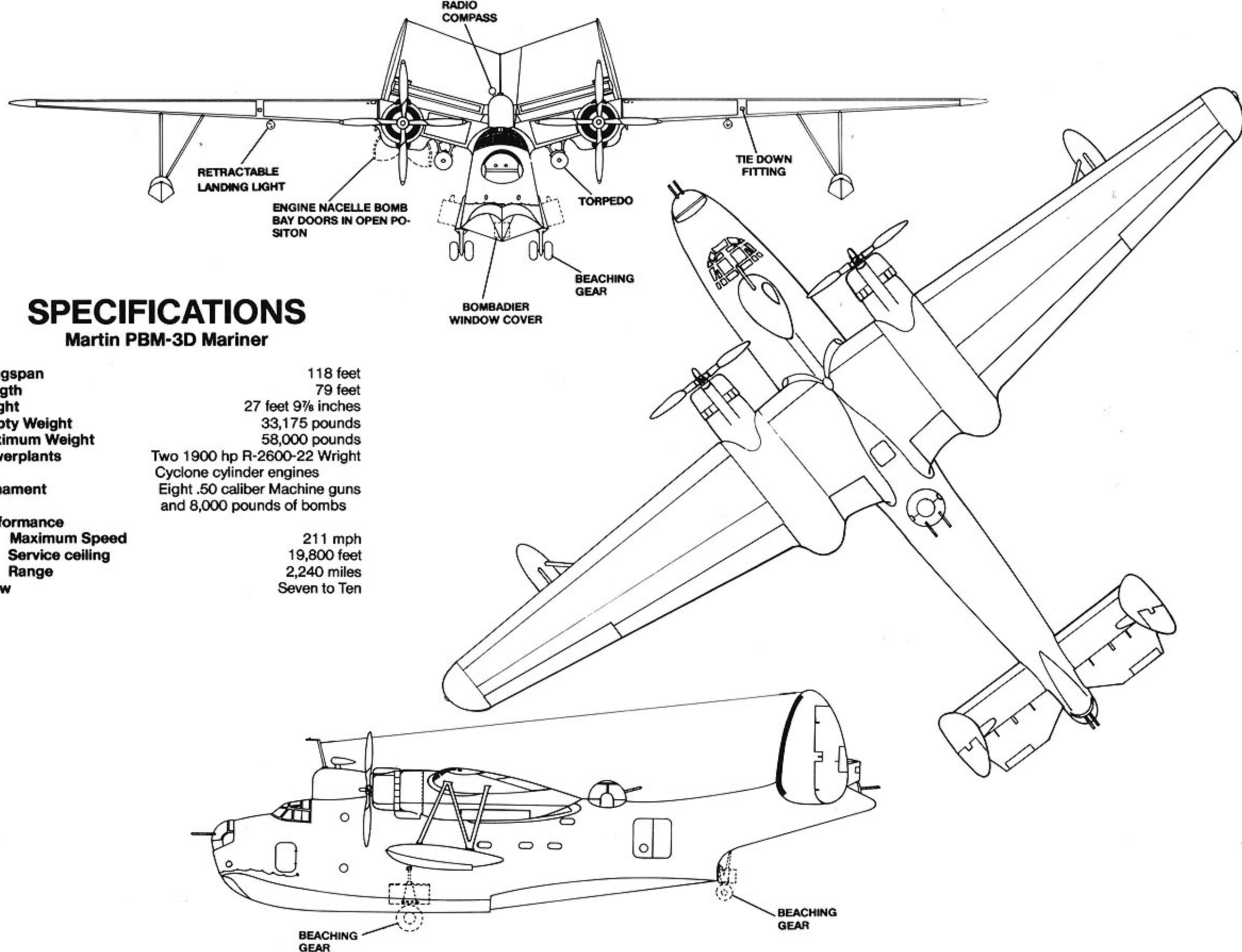


(Above) This PBM-3D being ferried by Patrol Plane Commander (PPC) Scott Fitzgerald of VR-8 during the early summer of 1944, had a port engine failure (note oil leak) and made an emergency landing in the Arizona Mountains. Scott selected Willcox Dry Lake, about sixty miles east of Tucson, for his 'belly in'. The condition of the boat shows off the skill of Fitzgerald's landing. (Scott Fitzgerald)

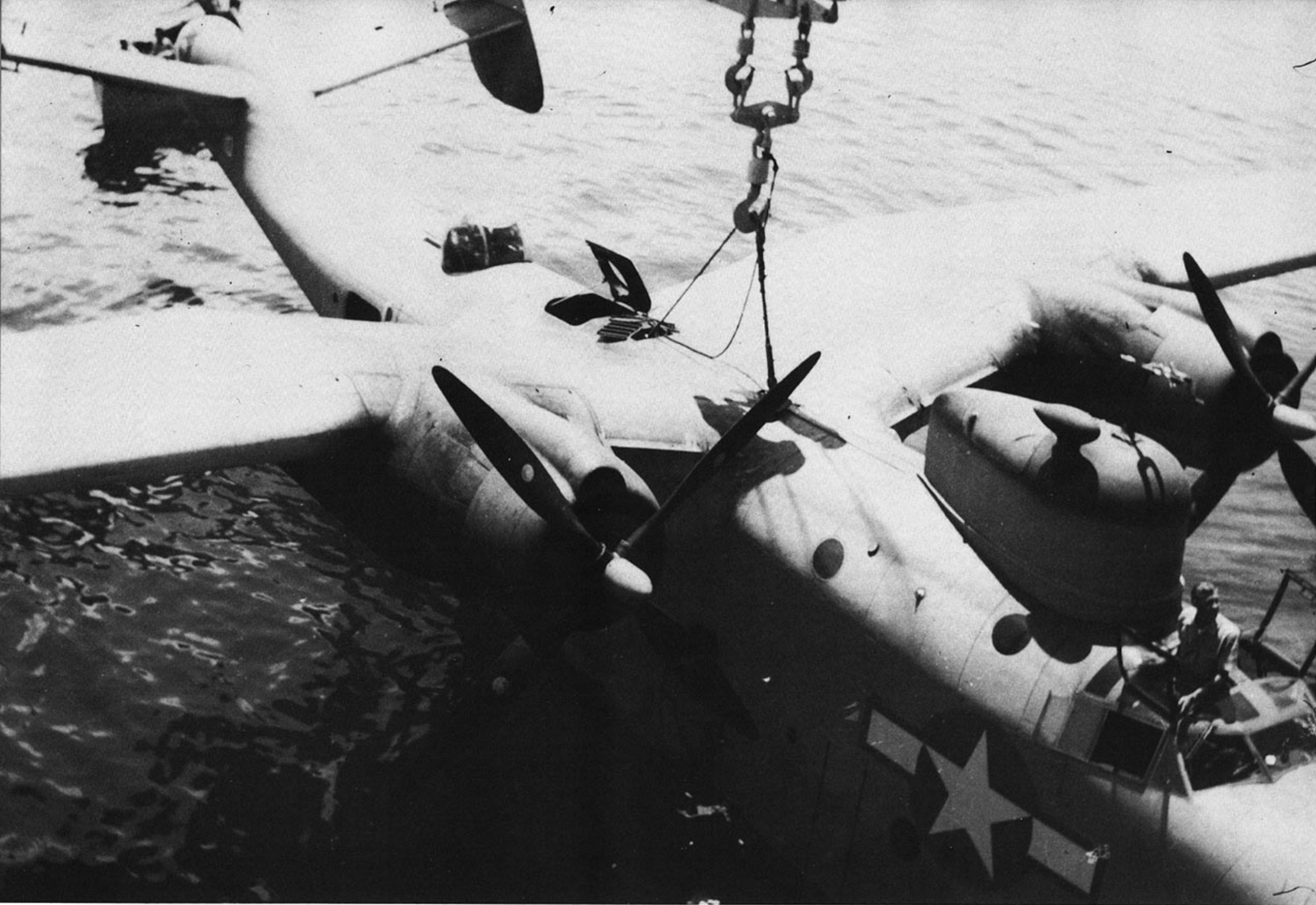
(Below) San Diego's Naval Air Station Crash and Salvage Officer LT (JG) E C Miller and Martin Service Representative Paul Mitendorff, prepared a plan for fly-off and called Glenn Martin, who endorsed the plan. San Diego's Assembly and Repair Shop modified jettisonable beaching gear with bolts to prevent swiveling during take-off. A special tailskid was added to increase the angle of attack in lieu of the standard tail beaching gear. Turrets and all combat gear were removed to lighten the plane as much as possible. (Martin Marietta)

(Below) Take-off was calculated with a ten knot wind. Monday, 22 May 1944, was to be the day. By noon the desert was calm, but soon after lunch the wind was gusting to 20 knots. LT (JG) Flynn from Hedron 5-2 Norfolk, a veteran with 2650 hours in big boats (650 hours in PBM-3s) was at the controls. The Mariner was man-handled into place and lifted off at 70 knots as calculated, circled back to jettison the beaching gear and flew off to an uneventful landing at San Diego. The boat's new name, later painted below the cockpit said it all: THE MIRAGE OF WILLCOX DRY LAKE. (Smithsonian Institution)









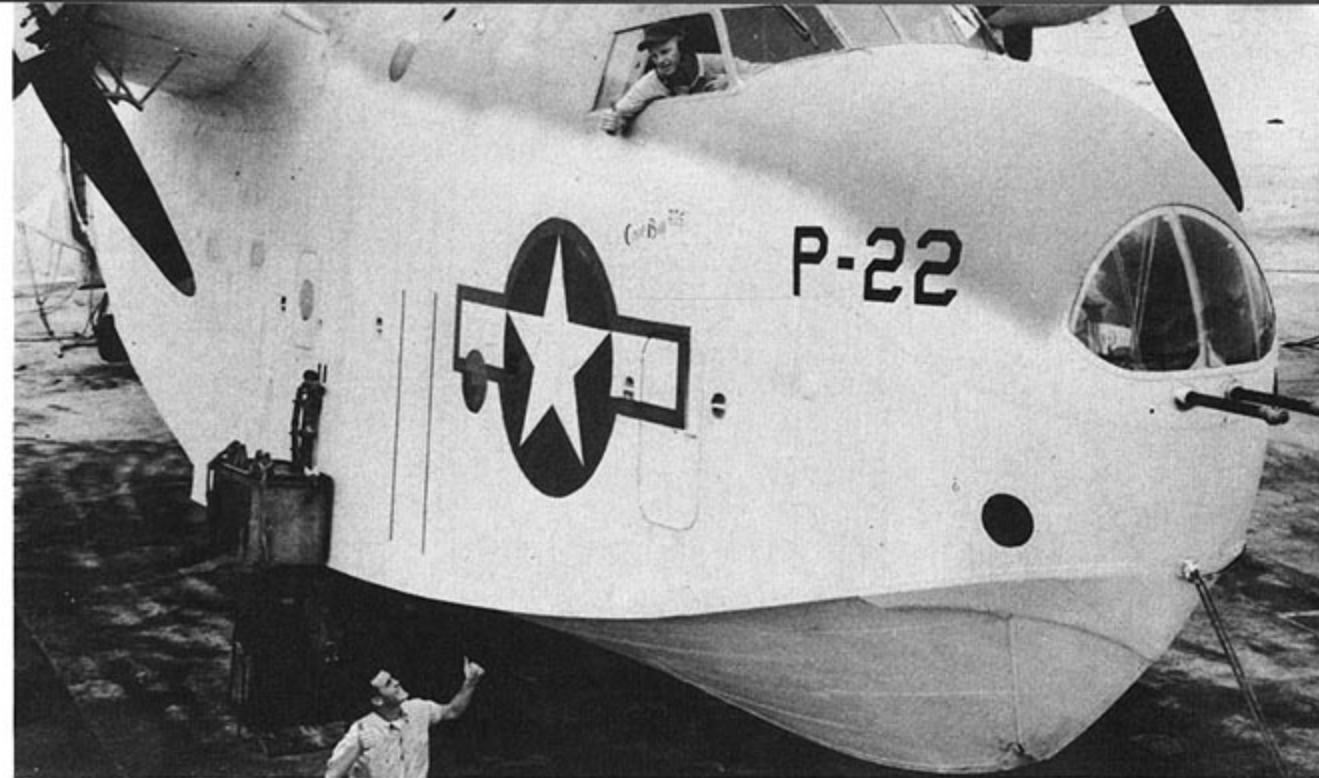
(Above) PBM-3D being made ready to be hoisted aboard a tender. The 1,900 hp R-2600-22 engines drove four bladed propellers. The increased power was a welcome addition, however, faulty valve seats remained a problem until all of the early engines were replaced. Kyle)

## PBM-3S Anti-Submarine Mariner

Under the designation PBM-3S ninety-four PBM-3 Mariners (BuNo 01674 to 01728 and BuNo 48125 to 48163) had the dorsal turret removed and faired over, the nose turret was replaced with a lighter twin .50 mounting, and a single .50 was installed in a modified tail enclosure. Powerplants were 1,700 hp R-2600-12s, many of which were fitted with cooling fans. The navigator's table was moved to the waist position where the starboard gun was removed, leaving only the port waist gun in position. Search radar for the anti-submarine patrol mission was installed in a large streamlined radome just behind the cockpit in front of the wing. These anti-submarine Mariners were painted in over-all White with Gray upper surfaces similar to British Coastal Command aircraft.

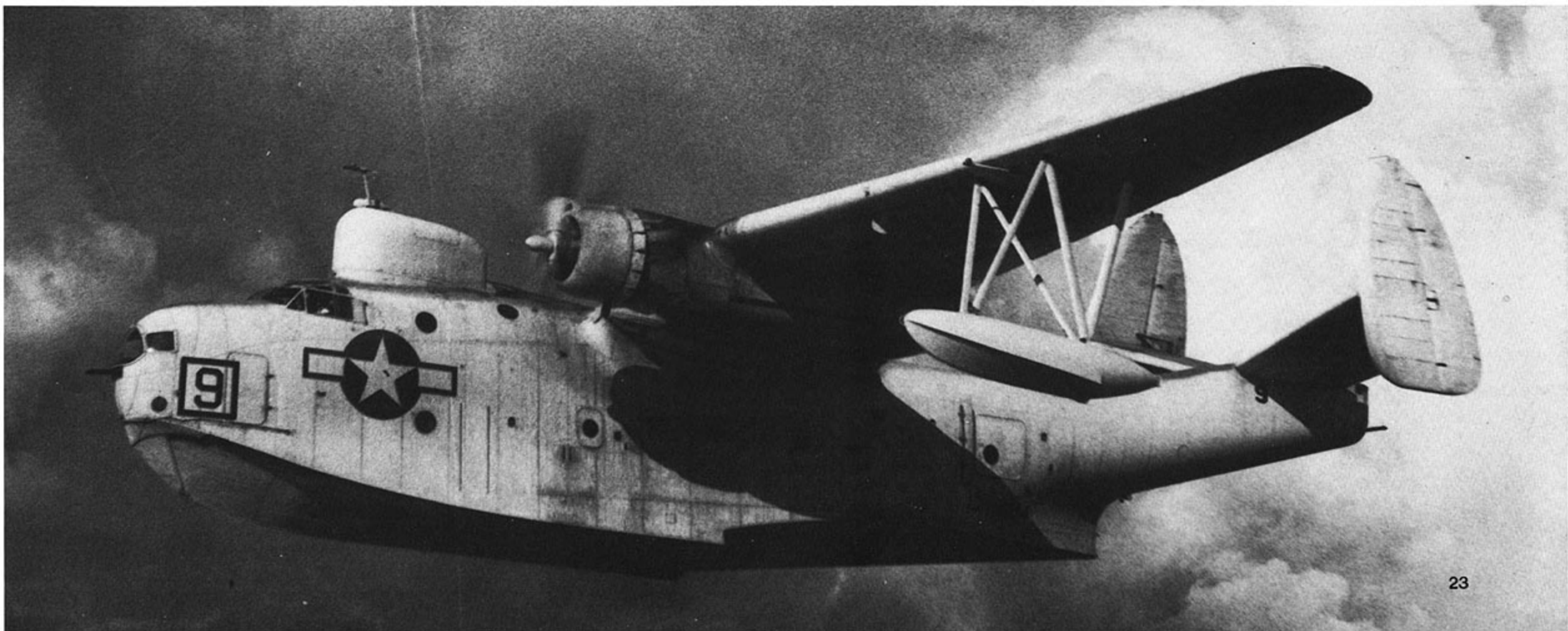
The PBM-3S was used exclusively in the Atlantic, with a key patrol being around the Panama Canal. The Mariner was teamed up with many other aircraft types to provide blanket coverage at both ends of this critical waterway. Canal Zone duty would continue for the service life of the Mariner.

A number of PBM-3S Anti-submarine Mariners were transferred to the Coast Guard in 1944 where they served until after the end of the war.



(Above) A PBM-3S of VP-206 is on the ramp at Coco Solo, the Canal Zone during the fall of 1943. PPC LT RB Stephens named his Mariner *Capt Bill II* honoring his new son and his father. 'Cactus Jack' Mason, co-pilot, is seen carrying the required side arm. The nose gun installation was a modification specifically for this series of anti-submarine Mariners. (USN via Stephens)

(Below) Cloud cover over Cuba frames this PBM-3S (BuNo 48149) of VP-214. LT (JG) Durdward Judy was the PPC of this Crew 9 Mariner. (USN via Freiderichsen)







(Above) White PBM-3S Mariners were a familiar sight at Rio. P-1 of VP-211 is seen on patrol along some of Rio's magnificent shoreline. (Smithsonian Institution)

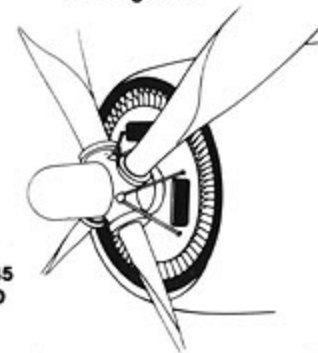
PBM-3C



PBM-3S



R-2600-22  
Engine With  
Cooling Fans



Found On  
Most PBM-3S  
and PBM-3D  
Mariners

(Below) Norfolk's busy seaplane ramp is loaded with PBM-3S and PBM-3D Mariners. Most of the Mariners appear to be new, which would place the date in early to mid 1944. The tri-color paint scheme of Semi-gloss Sea Blue upper surfaces, Non-specular Intermediate Blue sides, and Insignia White undersurfaces carried on the PBM-3Ds is in sharp contrast to the Insignia White and Dark Gull Gray of the PBM-3S Anti-submarine Mariners. The first PBM-3S, at the left, seems to have had an engine cooling fan installed. (National Archives via Silver)



# PBM-5 Mariner

## PBM-4E

In 1941 the Navy ordered 180 examples of a more powerful Mariner variant equipped with the new 2000 hp Wright R-3350-8 Cyclone 18 engine, and equipped with search radar under the designation PBM-4E. No test aircraft was built and the assigned serial numbers were cancelled, however a more powerful example of the Mariner was built under the designation PBM-5.

The PBM-5 was authorized in 1943, and powered with a pair of new larger 2100 hp Pratt & Whitney R-2800-34 twin Wasp engines equipped with Hamilton Standard three-bladed aluminum propellers, which by the end of WWII were replaced by Curtiss four-bladed steel propellers. The engine cowlings were slightly lengthened and were more noticeably tapered and the air intakes were moved rearward on the top of the cowlings. Provisions were made for Jet Assist Take-off (JATO) or Rocket Assist Take-off (RATO), the research for which had been authorized on 21 May 1941. The first prototype was flown in May of 1943 with the production machine being delivered in September of 1944.

The PBM-5 was the fastest Mariner variant with a maximum speed of 215 mph attained. Carrying a bomb load of 4,000 pounds range was 2,480 miles. A total of 589 PBM-5 Mariners were built. Unlike the PBM-3, a few PBM-5s were delivered with special purpose letter designations, however some PBM-5s were purpose built and so designated.

## PBM-5E Electronic Mariner

A small number of PBM-5Es were delivered with AN/APS-15 radar and additional electronic gear.

## PBM-5C

A single PBM-5E was converted and designated to PBM-5C for use in missile tests.

## PBM-5N All-Weather Mariner

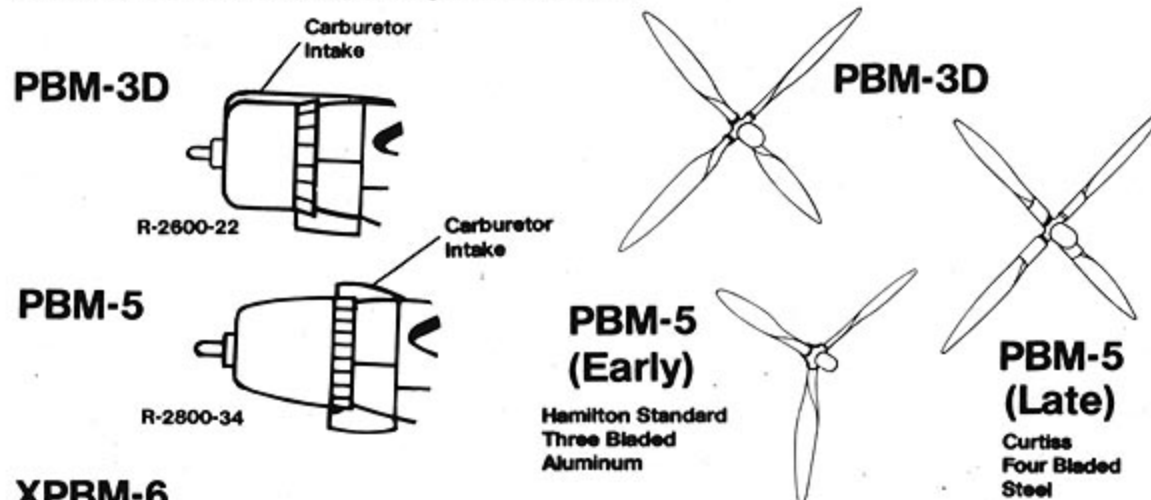
A single PBM-5E (98606) was completed as a PBM-5N All-Weather Mariner.

## PBM-5G Search and Rescue Mariner

This was a post-war designation assigned to twenty-four standard Navy PBM-5s that were modified and redesignated PBM-5Gs to carry out the search and rescue mission with the Coast Guard.

## PBM-5S Anti-Submarine Mariner

A small number of PBM-5 Mariners were modified with search radar and other anti-submarine equipment and delivered under the designation PBM-5S.



## XPBM-6

A single PBM-3D (45274) was modified and delivered under the designation XPBM-6. Further details are unavailable.

(Below) The PBM-5 was the first Mariner to be factory provisioned JATO. Combat use of JATO was on PBM-5s belonging to VPB-19 during the Iwo Jima assault in late February of 1945. These two PBM-5s, using JATO on take-off, use only the top bottles, which leaves the two bottom bottles if needed for a Dumbo take-off. (USN via Raithel)





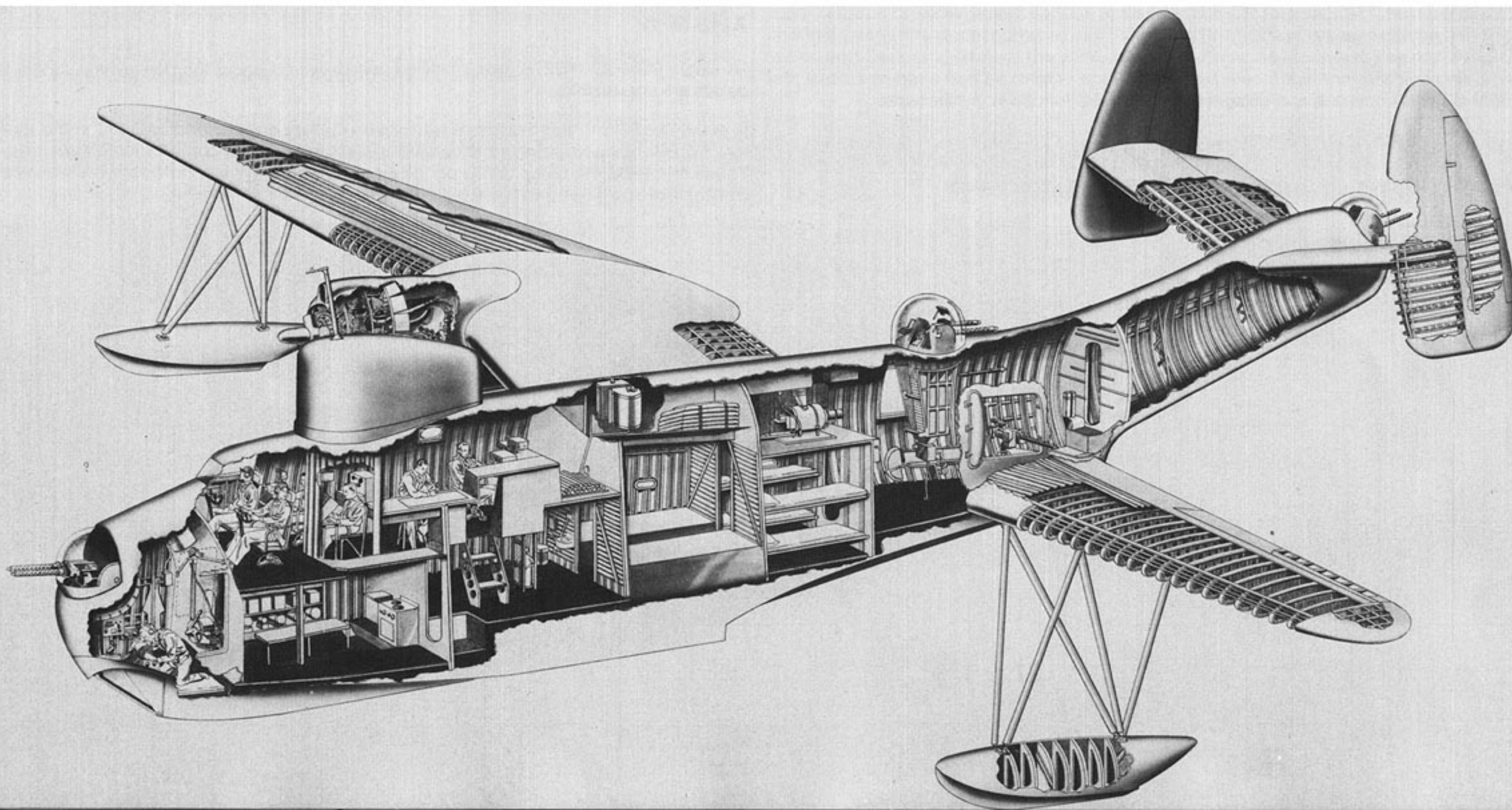


(Above) A PBM-5E of VP-32 on the ramp at Eagle Mountain Lake, just north of Fort Worth, Texas in September of 1945. Most, if not all, Mariners enroute from the east coast to San Diego stopped here for refueling and/or maintenance. Take-offs could be made into the wind on this large lake. The PBM-5E was identical to the PBM-5, except for the addition of APS 15 radar that included a radar bomb sight mounted in the galley. (Friederichsen)

(Below) This PBM-5 cut-away provides an excellent look at the insides of the Mariner. Earlier PBM variants had an interior that was very close to this same arrangement. Walkaround and head room was extremely important to reduce fatigue on the long patrol flights. (Martin Marietta)

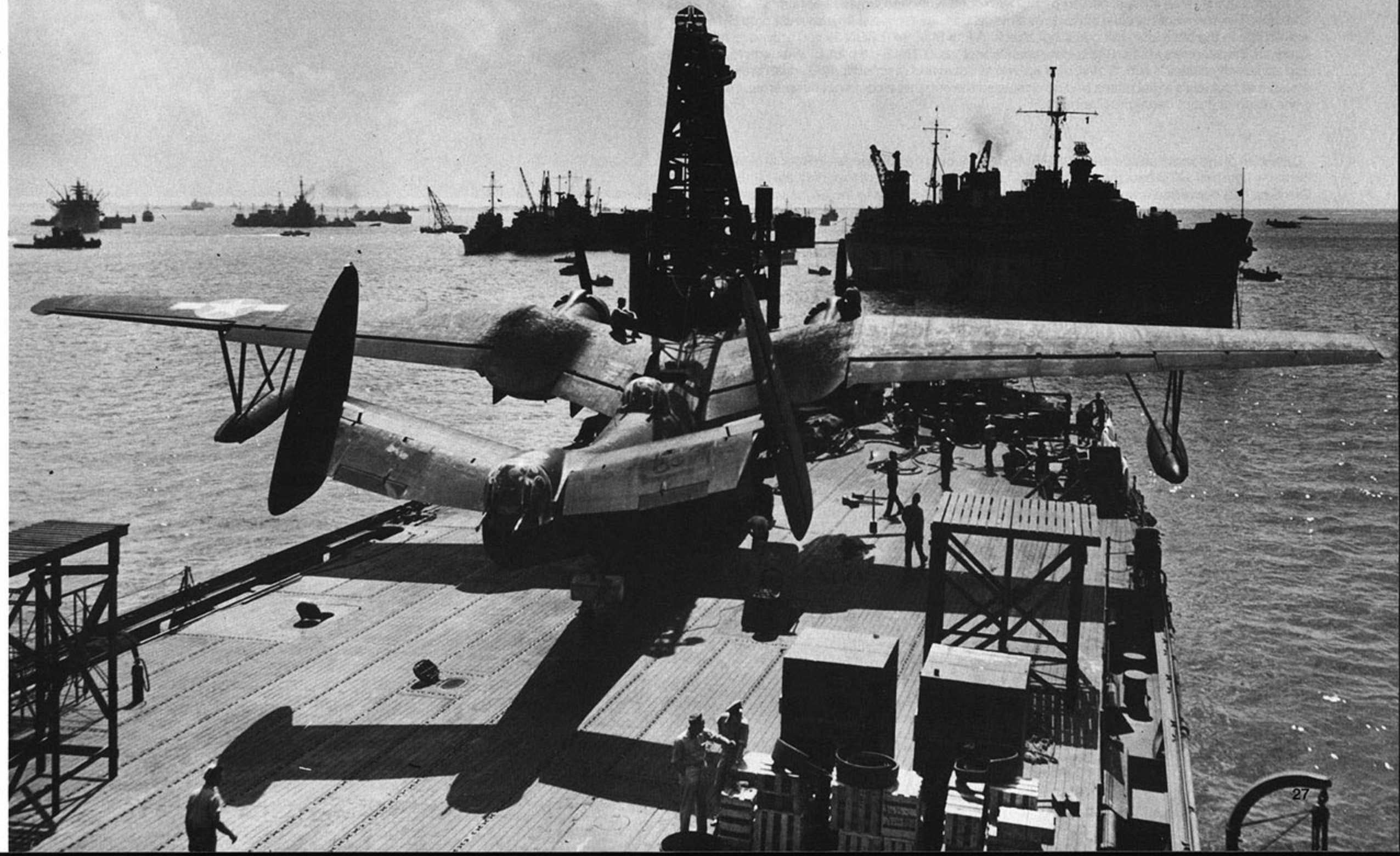


(Above) A PBM-5 of VPB-26 at Okinawa armed with 'live' torpedos for a standby mission. All Mariners were equipped to carry a torpedo under each wing between the engine nacelle and hull. The first Mariner torpedo missions are believed to have been flown by PBM-3Ds from Kossol Passage (Palau) by PBM-3Ds during the Battle of Leyte Gulf. The final Mariner torpedo missions were at Okinawa where opportunities to attack Japanese blockade runners abounded. By this stage of the war, most operational squadrons had received torpedo training. Night missions, whether 'Blackcat' by PBY Catalinas, or by PBM 'Nightmares', had become routine and were often flown simply as night patrols. A few specific night torpedo missions were flown, but results of these hazardous night torpedo missions during the Okinawa campaign ranged from none, to minimal, to probable! (Joe Zannelli)





A PBM-5 resting on a tender at a busy Pacific seadrome during the spring of 1945. The Mariner's graceful and distinctive wings and tail are obvious. The 'Shannon Fix' vortex airfoils can be seen just inboard of the rudders. The carburetor air intake fairings on top of the R-2800-22 engines were moved rearward on the cowling, and were a key feature to identifying the PBM-5. The PBM-3 series had air intakes that extended to the front of the cowling. (USN via Raithel)



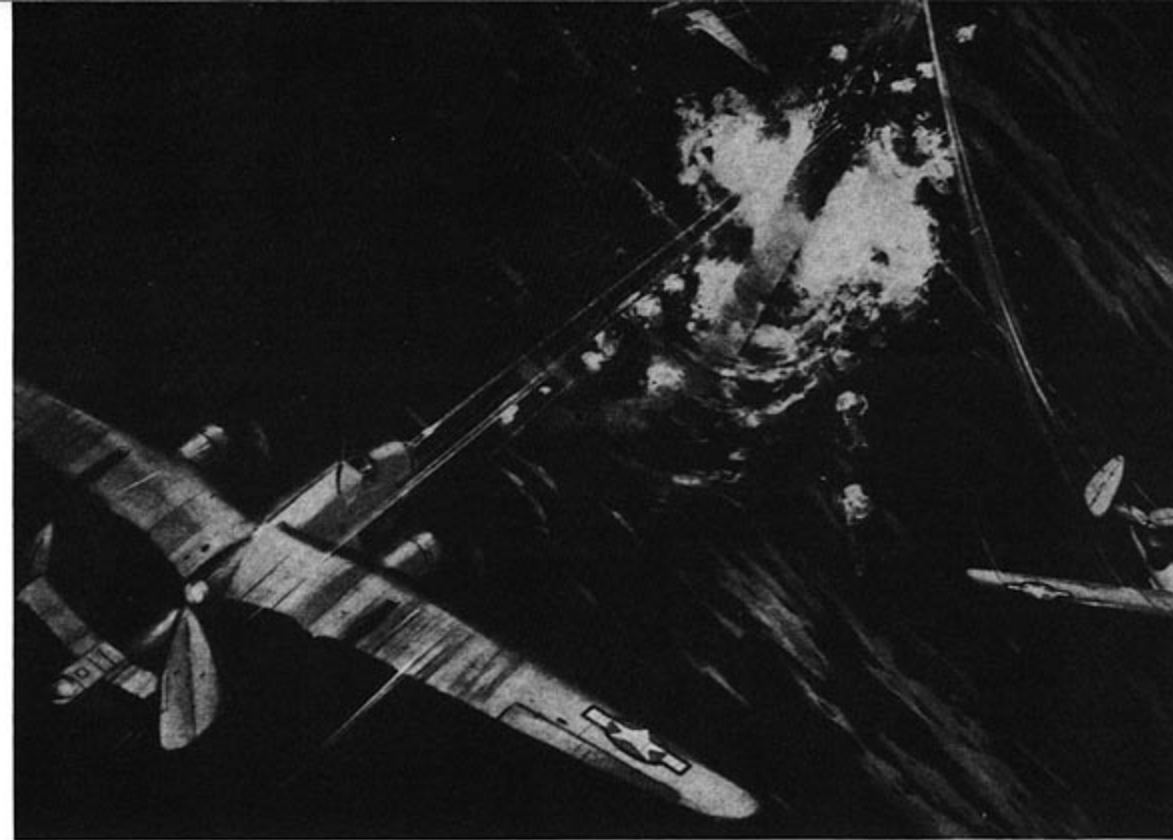


## The Mariner At War

The painting at right relives a ten hour slugging match on 6 August 1943 that eventually involved six Navy planes, a Navy Blimp, and an Army bomber in sinking a surfaced U-boat in the Caribbean. A newer type of German submarine, carrying very accurate anti-aircraft batteries, was sighted and attacked by a lone PBM piloted by LT Matuski. His attack damaged the sub, reducing its speed to about three knots, but the submarine hit Matuski's Mariner which was listed 'missing in action'.

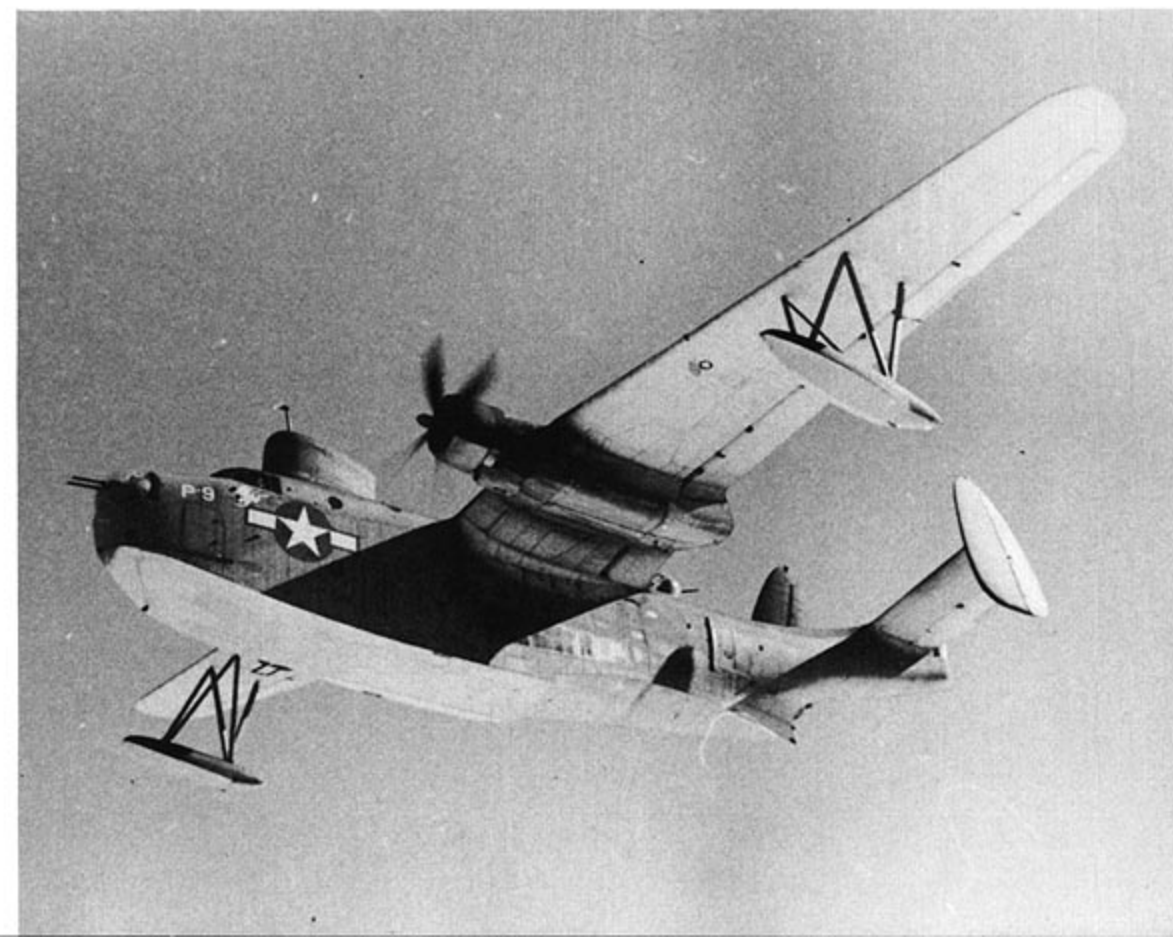
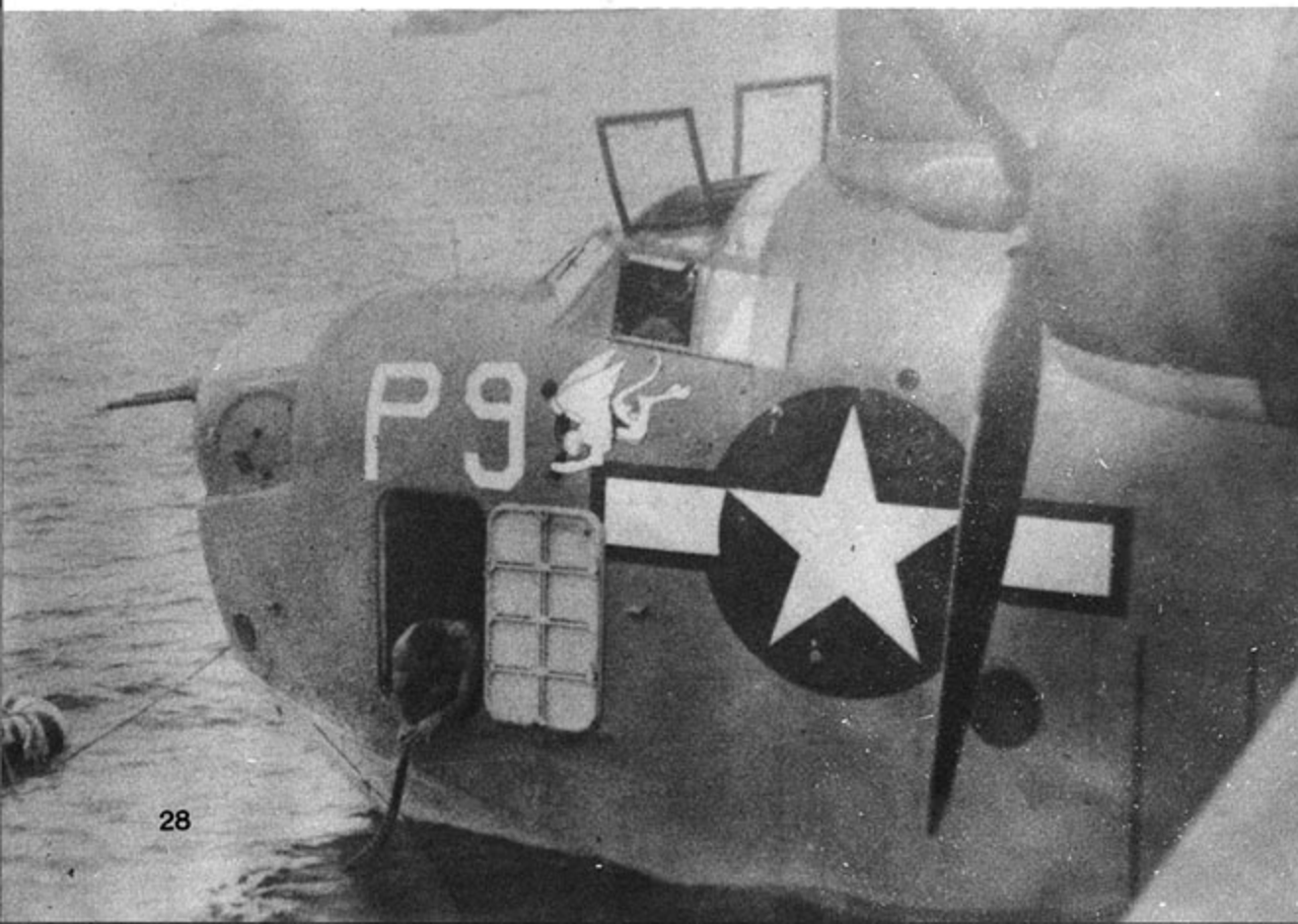
Two hours later a second Mariner (LT Crockett) arrived and dropped bombs, which briefly silenced the sub's anti-aircraft fire. A second run by Crockett resulted in stern damage to the sub. Crockett radioed for help and a Navy PV-1 Ventura of VP-130 arrived, and then a near-by blimp. The Ventura made a run and further damaged the sub. A third Mariner arrived (LT Dresback). The two Mariners and the Ventura made a co-ordinated three plane attack, inflicting damage, but also taking damage.

A fourth Mariner then arrived, piloted by LCDR Robert Null, who would later command VPB-26 at Okinawa. Two more coordinated attacks were made, both ineffectively. An Army Air Force B-18 'Bolo' arrived late in the afternoon, but could not attack. A fifth Mariner (LCDR Jester) arrived to relieve LT Crockett. The Mariners located the U-boat again about 2300. The B-18 pilot, LT Wiederhold, attacked and apparently sank the sub. A destroyer arrived at dawn and rescued forty German crewmen, who stated that Matuski's initial attack had so damaged the sub that it could not submerge, it had finally gone down at about midnight. (Zannelli)

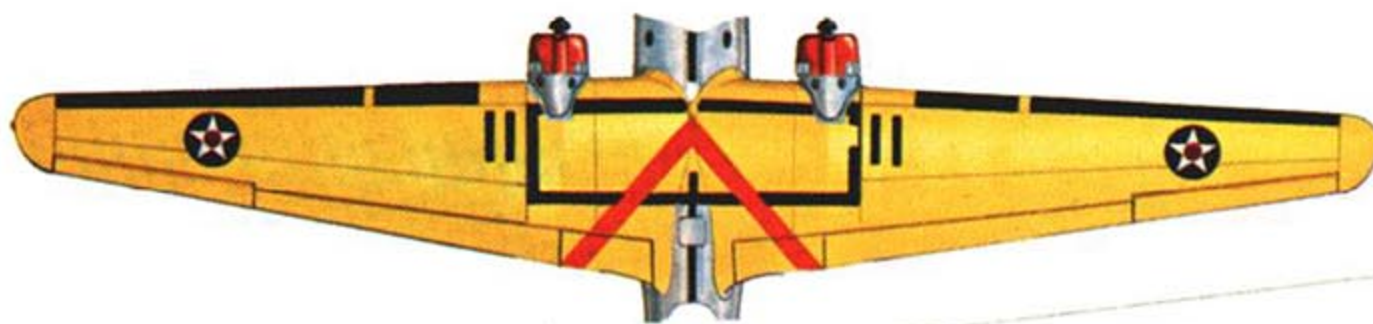


Deliveries of the first of an eventual 630 PBM-5s that would be built, began in August of 1944, about the same time that JATO became operational. The squadrons that were to participate in the assault on Okinawa had converted from the PBM-3D to the new PBM-5 prior to the Okinawa campaign. The Okinawa Operation, beginning at Kerama Retto on 29 March 1945, involved some ninety PBM Mariners, a squadron of PB2Y Coronados, and a few Dumbo PBYS, requiring an eventual fifteen seaplane tenders.

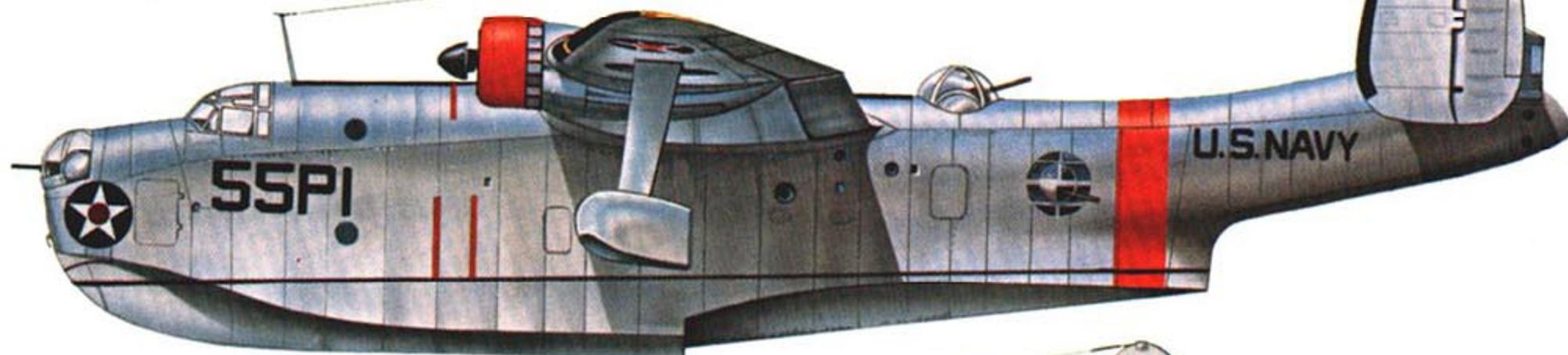
(Below and Below Right) Lt Floyd Harris was PPC of this PBM-3D coded P-9 carrying the VPB-202 squadron insignia. (Harris)



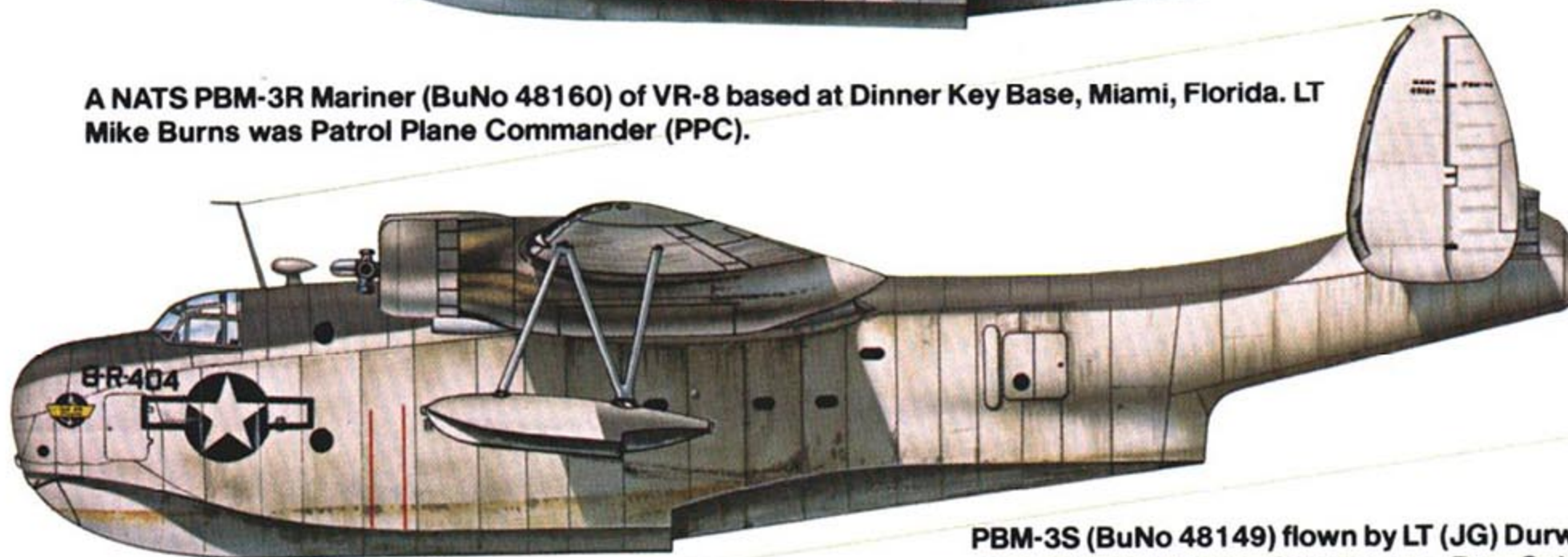




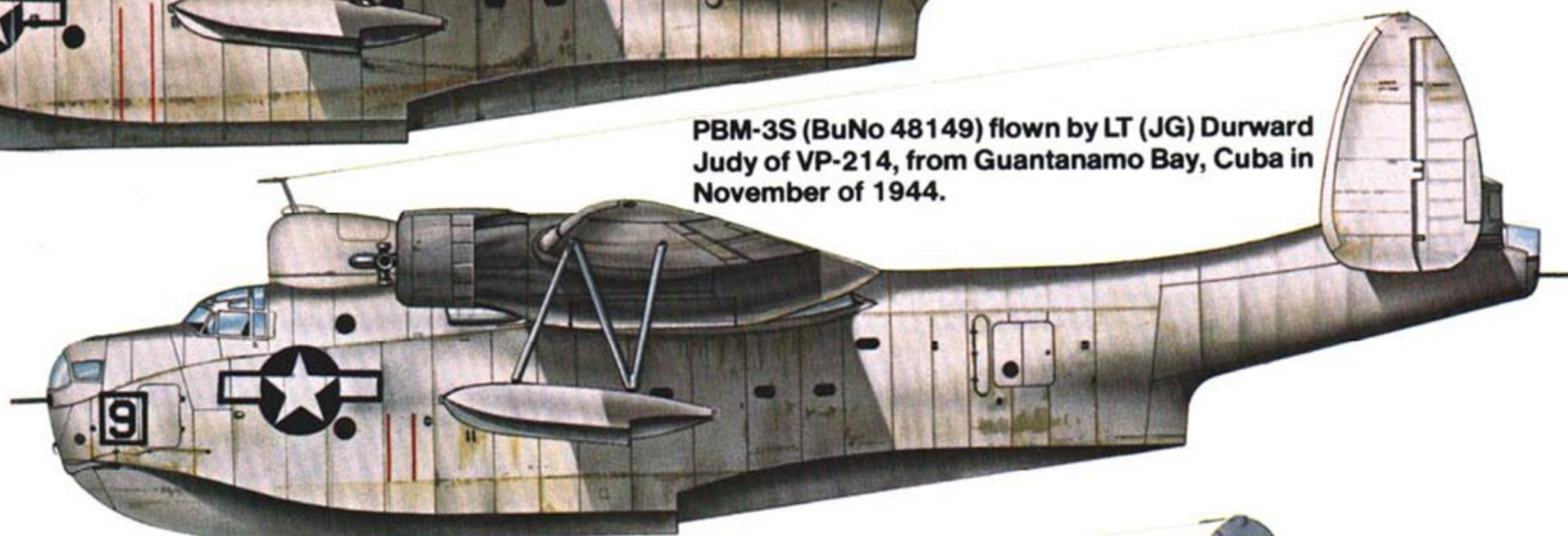
PBM-1 (BuNo 1257) was assigned to LCDR A B Vosseller, Commanding Officer of VP-55, operating from Norfolk, Virginia.



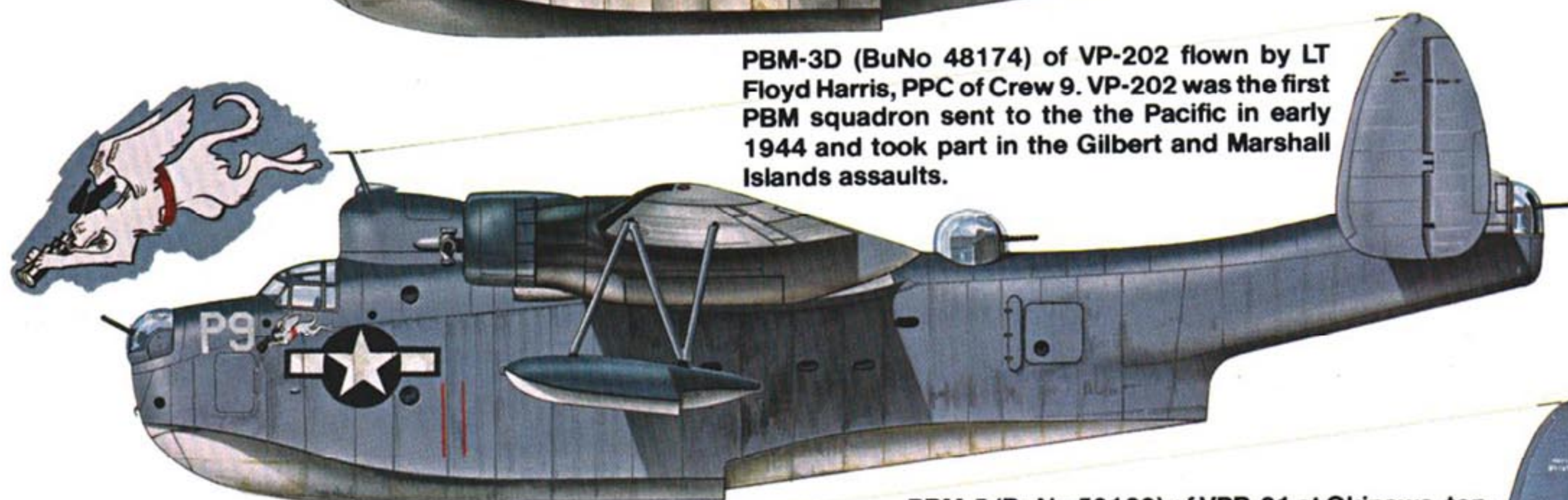
A NATS PBM-3R Mariner (BuNo 48160) of VR-8 based at Dinner Key Base, Miami, Florida. LT Mike Burns was Patrol Plane Commander (PPC).



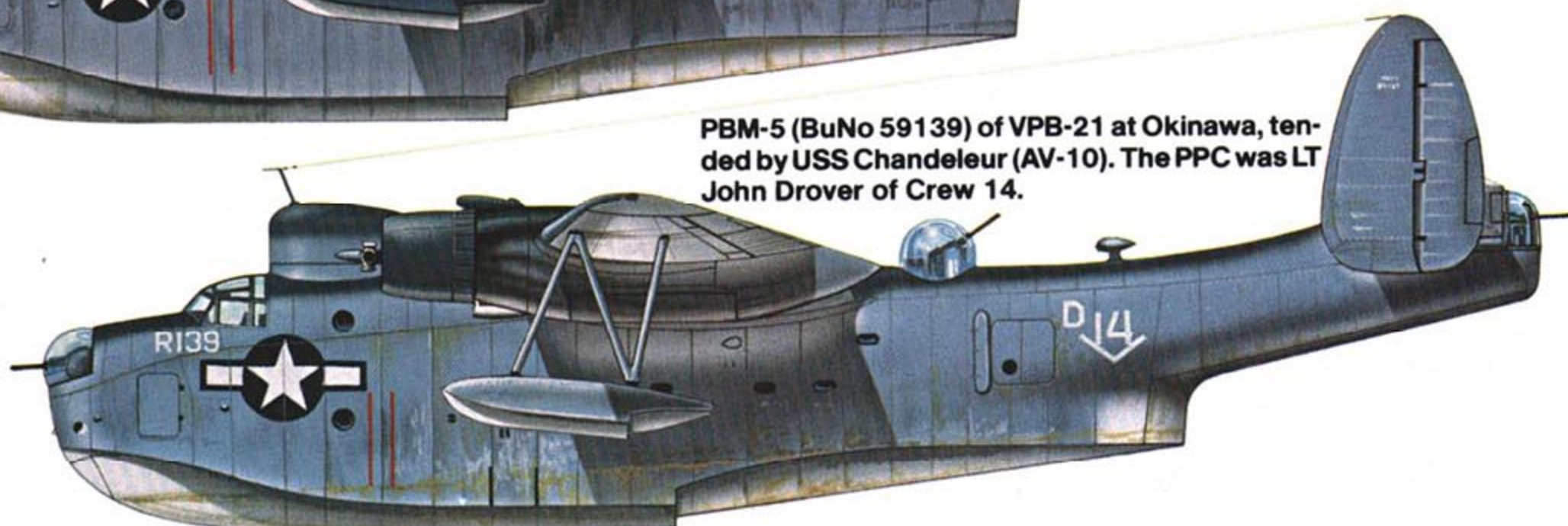
PBM-3S (BuNo 48149) flown by LT (JG) Durward Judy of VP-214, from Guantanamo Bay, Cuba in November of 1944.



PBM-3D (BuNo 48174) of VP-202 flown by LT Floyd Harris, PPC of Crew 9. VP-202 was the first PBM squadron sent to the the Pacific in early 1944 and took part in the Gilbert and Marshall Islands assaults.

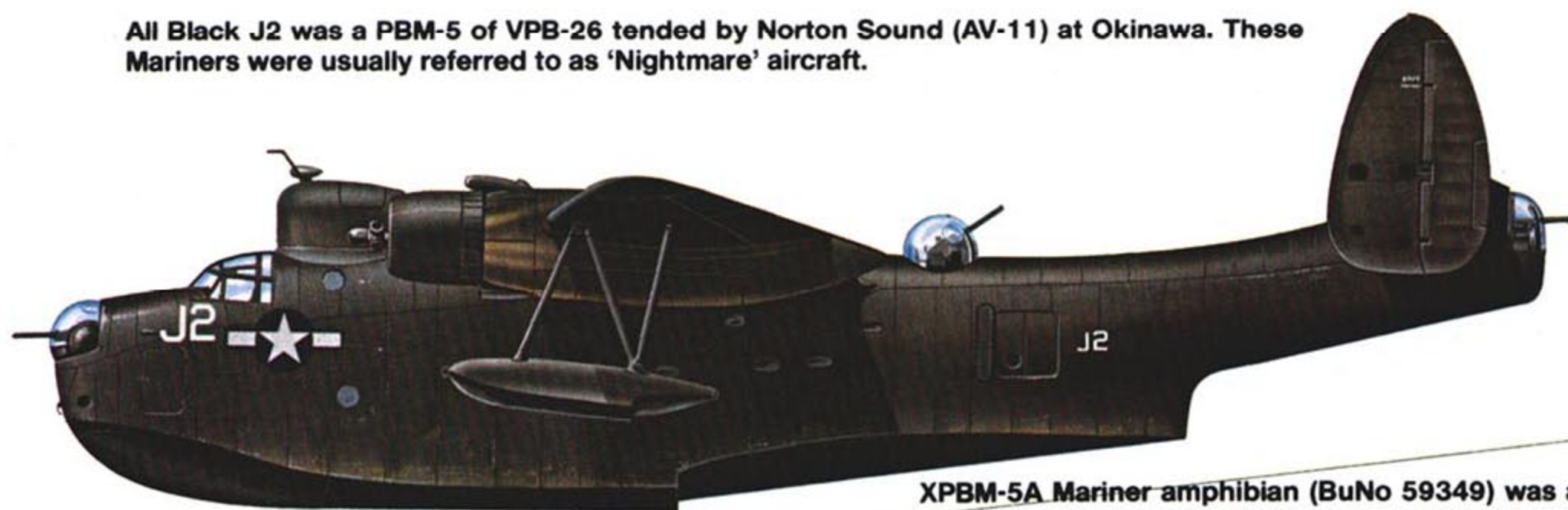


PBM-5 (BuNo 59139) of VPB-21 at Okinawa, tended by USS Chandeleur (AV-10). The PPC was LT John Drover of Crew 14.





All Black J2 was a PBM-5 of VPB-26 tended by Norton Sound (AV-11) at Okinawa. These Mariners were usually referred to as 'Nightmare' aircraft.



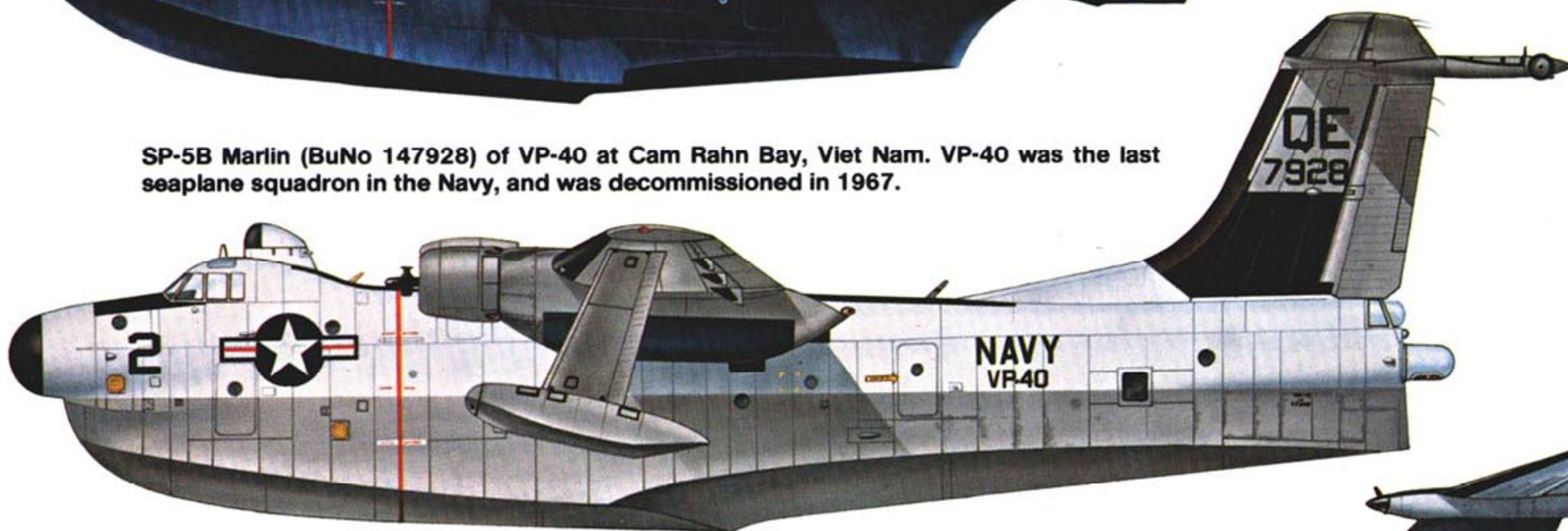
XPBM-5A Mariner amphibian (BuNo 59349) was a converted PBM-5 and initially flown in late 1945. It was identical to the PBM-5 excepting for its amphibian landing gear.



The single JRM-2 Mars (BuNo 76824) built, named Caroline Mars it served along side the four JRM-1 Mars in VR-2 at Alameda, California.



SP-5B Marlin (BuNo 147928) of VP-40 at Cam Rahn Bay, Viet Nam. VP-40 was the last seaplane squadron in the Navy, and was decommissioned in 1967.



XP6M-1 Seamaster was the final Glenn L Martin flying boat design. It was to have been the air arm of an 'integrated force' of attack seaplanes, seaplane tenders and submarine tankers.







(Above) In early July as the battleline on Saipan was progressing toward Garapan, the largest town on island, where Tanapag Harbor and a large seaplane base was located. The Mariners are anchored about three miles off shore in an 'open sea' seadrome waiting for Garapan to be taken. The need for seaplane ramps in order to carry out maintenance was critical. The first PBM was beached at Tanapag on 10 July amidst the bodies of Japanese that had not yet been buried. (Author)

Quotes from an Associated Press dispatch describes the Mariner's role:

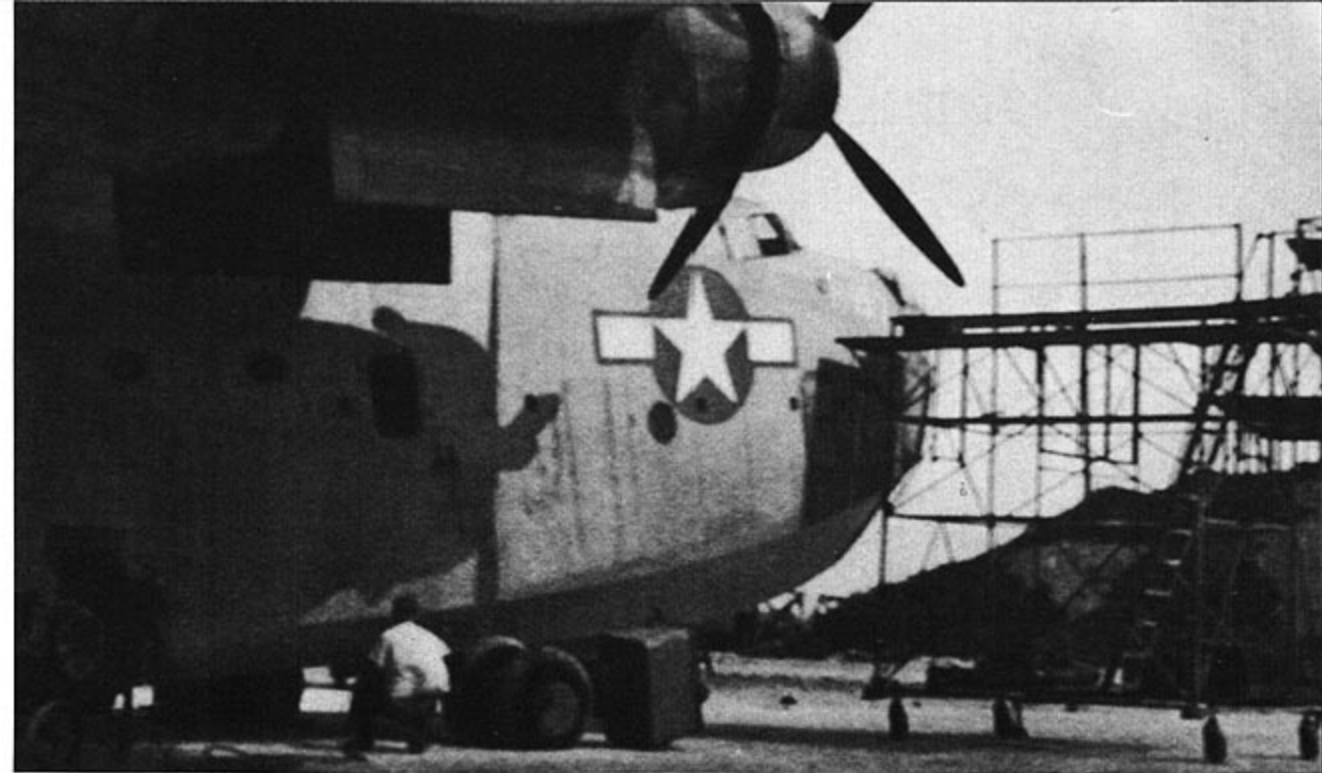
*This was the situation: Okinawa was 1400 miles from our Marianas base and less than 350 miles from the Japanese homeland. The distance was too great for land based air of the density needed, carrier based aircraft were for other assignments and were not suited for the job. The answer was a floating seaplane base, so the small task group of three large tenders and four small ones sailed from the Marianas in mid-March. Strategists had chosen Kerama Retto, 14 miles west of Okinawa, for the base.*

*An Army division was sent to Kerama on Monday, March 27 to take over a few of the dozen islands. Soldiers were going ashore when the small tender force steamed in Tuesday morning. The scene in the early dawn looked a bit like New York Harbor with the landing craft and small boats dashing around.*

*It was a busy day getting this China Sea home ready for the fat bellied birds, already enroute from bases as far away as New York is from Omaha. The big fellows arrived in small groups, flying thru weather that for awhile had threatened the whole Ryukyian operation. They came primarily to patrol and search the China Seas and the Pacific Ocean side of the Islands. They were to forestall any attempts of the Japanese to bring in submarines, warships and aircraft against our invasion forces, which by then were enroute.*

*"The Mariners got a taste of everything in their first days at Kerama, coming home with flak and bullet holes in them by the score. They battered their hulls on choppy waves and tore off their tails bouncing on swells, but they went on doing a glorious job."*

(Below) No seaplane base was complete without a Chief's Club and an Officer's Club. The 'O' Club at Saipan's Tanapag Harbor was named after VP-16's tender, the POCOMOKE (AV-9) that had ramp responsibilities. The Club was in operation soon after 10 July 1944 when VP-216's Crew 8's PBM-3D was beached on the ramp. The Squadrons based at Saipan and their tenders are listed on the marquee. (Harris)



(Above) The Seabees rushed the Saipan ramp facilities into service without removing Japanese equipment or rubble. Seabase CASU-F is seen working on a PBM-3D Mariner using Japanese equipment during 1944. (Author)

As the war progressed, Mariners began to bomb Japanese shipping and shore based installations. They frequently tangled with enemy aircraft, and the PBM proved to be a tough aircraft to knock out of the sky.

(Below) The Japanese four-engine Kawanishi H8K Emily flying boat, in the author's opinion, was the best seaplane in use during World War II. It had both a speed and altitude advantage over the Mariner and had excellent armor protection. Several were destroyed on the Tanapag Seaplane ramp just before it was occupied. (USN via Harris)





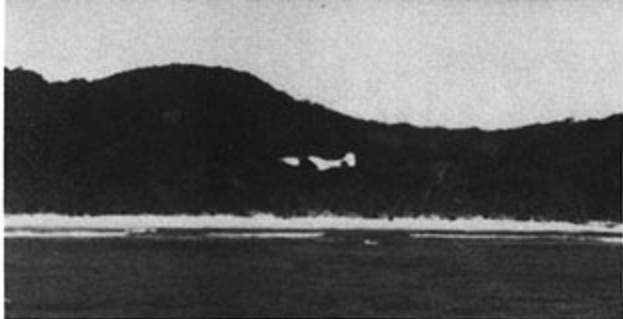


(Above) Eight months after the Tanapag Seaplane Base was declared secure it was being used as a staging area for the invasion of Okinawa. PBM-5 Mariners, a PBY Catalina, two PB2Y Coronados and a PB2Y-3R NATS Mariner can be seen on the ramp. A number of seaplane tenders are at anchor in the background. (Martin Marietta)

(Below) Two of VP-16's PBM-3D Mariners are seen near an unidentified tender at the Kossol Passage seadrome after their arrival on 17 September 1944. The USS POCOMOKE (AV-9) tended VP-16s planes and is unseen in the foreground. (Archives via Bill Silver)

(Below) Eight Mariners of VP-16 planes on their way from Saipan to Kossol Passage (Palau) on 17 September 1944. On their arrival they found mines still being exploded in their seadrome. (Archives via Bill Silver)





(Above) February 1945 a downed flyer off a Philippine Island is covered by a P-51 Mustang. (Author)

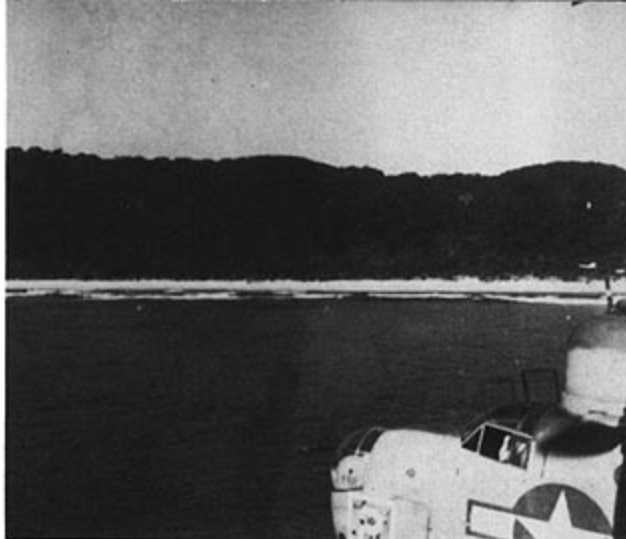
## AIR-RESCUE OPERATIONS

Open sea rescues became commonplace, not only by the several Search and Rescue Squadrons (Dumbos), but by patrol squadrons as well. The Michael Kammen report for the Navy's Bureau of Aeronautics states:

*The greatest World War II successes in air-sea rescue operations were achieved during the months following the initiation of the campaign for Okinawa. From April to August of 1945, the percentage of survivors rescued was higher than at any previous time during the war. The PMB Mariner was brought into full use during this period: it was able to complete rescues which its predecessors would have shied away from or found altogether impossible. From April 1 to May 17, there were 132 men rescued out of 186 possible survivors. Of these, 63 were picked up by PBM 'dumbos', 44 by ships, 18 by PBM squadron aircraft, five by VOS aircraft, and one by land forces; one made shore unassisted. Thus, they rescued almost twice as many downed aviators as any other agency. The most successful group was the six twin-engined flying boats of VH-3. Flying missions from Kyushu to Formosa, VH-3 made 33 rough open-sea landings, of which 21 were made within ten miles of enemy-held land, and seven while under fire from shore batteries.*



(Above) Getting some help for the last yards to the boat. (Author)



(Above) Crew of VPB-17 in a PBM-3D lands off-shore. (Author)



(Above) Successful, they return with the downed pilot. (Author)



(Above) A happy pilot and a proud Mariner crew back home at an unnamed P I base. (Author)



(Above) The China Coast 23 July 1945. R205 a PBM-5 from a Search and Rescue Squadron (DUMBO) rescues a downed pilot. Air Intelligence ordered the Dumbo to land at 28-31, 129-19 degrees, then taxi ten miles to the still waters of Taichow Bay, where Capt Allryd, a downed pilot would be in a sampan marked with white panels on the deck. Allryd's survival flag is being held up. A VPB-21 Mariner flown by LT Floyd Harris flew escort for this Dumbo Mission. (USN via Harris)





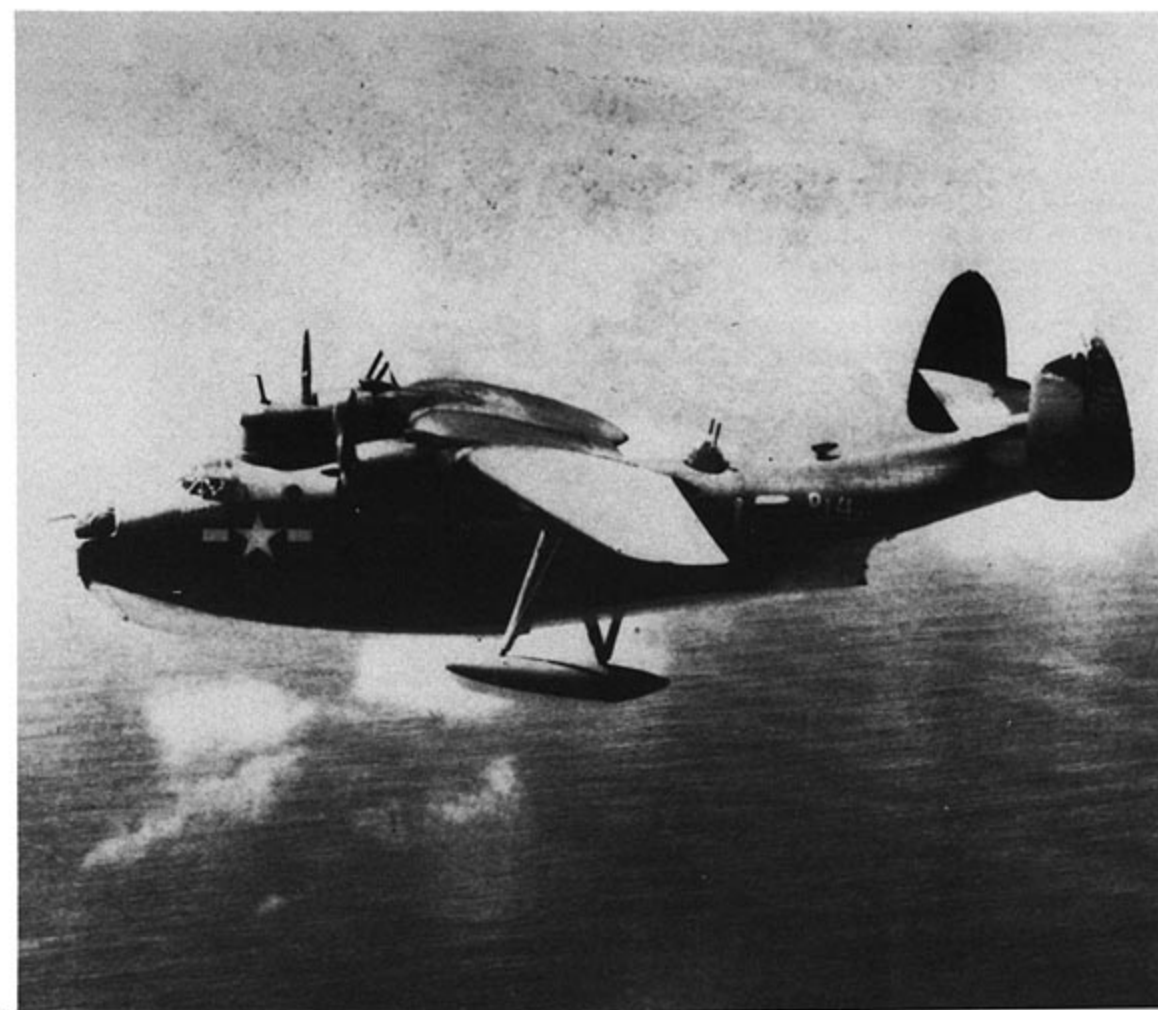
(Above) The TANGIER Seaplane Tender (AV-8), a survivor of Pearl Harbor, spent the war first tending PBYS in the Southwest Pacific and later tending both PBYS and PBMs in the Philippines. An all black PBM 'Nightmare', as they were usually called, is being hoisted aboard the TANGIER in the Philippines. PBMs flew many 'Black Cat' type of missions in the Philippines and at Okinawa. The Mariner's superior radar, more comfortable crew stations and heavier armament gave them a decided advantage over the Catalina that had pioneered the Black Cat mission. (Tailhook via Silver)

(Below) Two four engine PB2Y Coronados of VPB-13 are seen. They were the only other seaplanes used for patrol bombing missions at Okinawa. (Mahlon Kidd)



(Above) VPB-18 was one of six patrol squadrons based at Okinawa with LCDR R R Boettcher as its Commanding Officer. This scoreboard was prepared at war's end to display the squadron's toll on the Japanese. (Bill Townsend)

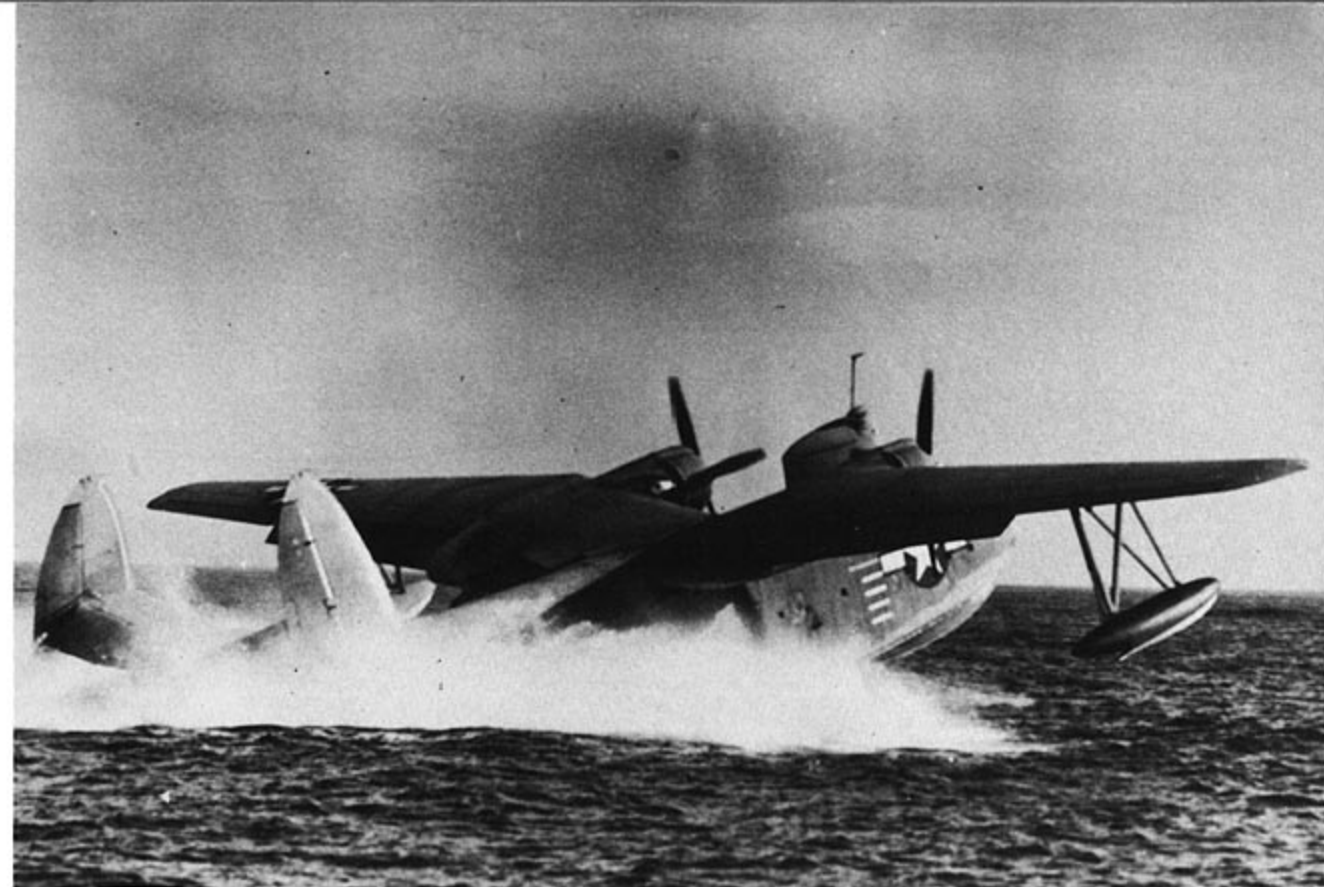
**(Below) Lt John Drover's VPB-21 Crew 14 PBM-5 Mariner suffered heavy rudder damage on 4 August 1945. Drover's PBM (BuNo 59139) had been hit by 40mm fire while he and a second Mariner, flown by LT Floyd Harris, were attacking Japanese shipping in Tsingto Harbor in Mawkwam Bay on the China Coast. Drover's Mariner also took hits in the tunnel section, and the tail gunner, Tom Granger, was hit by flak in the neck and arms. (John Drover)**







(Above) A PBM-5, at Kerama Retto, a former Japanese seadrome sits on a pontoon repair bridge, while its port float is being repaired. Almost ninety Mariners from VPB-18, 21, 208, 27, 26, VH-1, 3, 4 and 6 were at Kerama Retto, and were tended by fifteen tenders. They, along with a squadron of PB2Ys (VP-13), formed the greatest seaplane operation in history during the assault on Okinawa. (USN via Townsend)



(Above) A PBM-3S executing a full stall landing. The surface of the water appears to have light chop and no swells, which were ideal conditions for a full stall landing. Open sea landings during Dumbo missions never offered these water conditions. (Smithsonian Institution)

(Below) Rear Admiral HM 'Beauty' Martin's FAW-17 Flagship Mariner, a PBM-5, is on the ramp at Kaneohe, Hawaii in December of 1945. LT Floyd L Harris was the Flag Lieutenant and pilot. Martin had been the Kaneohe Naval Air Station Commanding Officer on 7 December 1941. The stars are White on a Dark Blue field with a White border. (Harris)

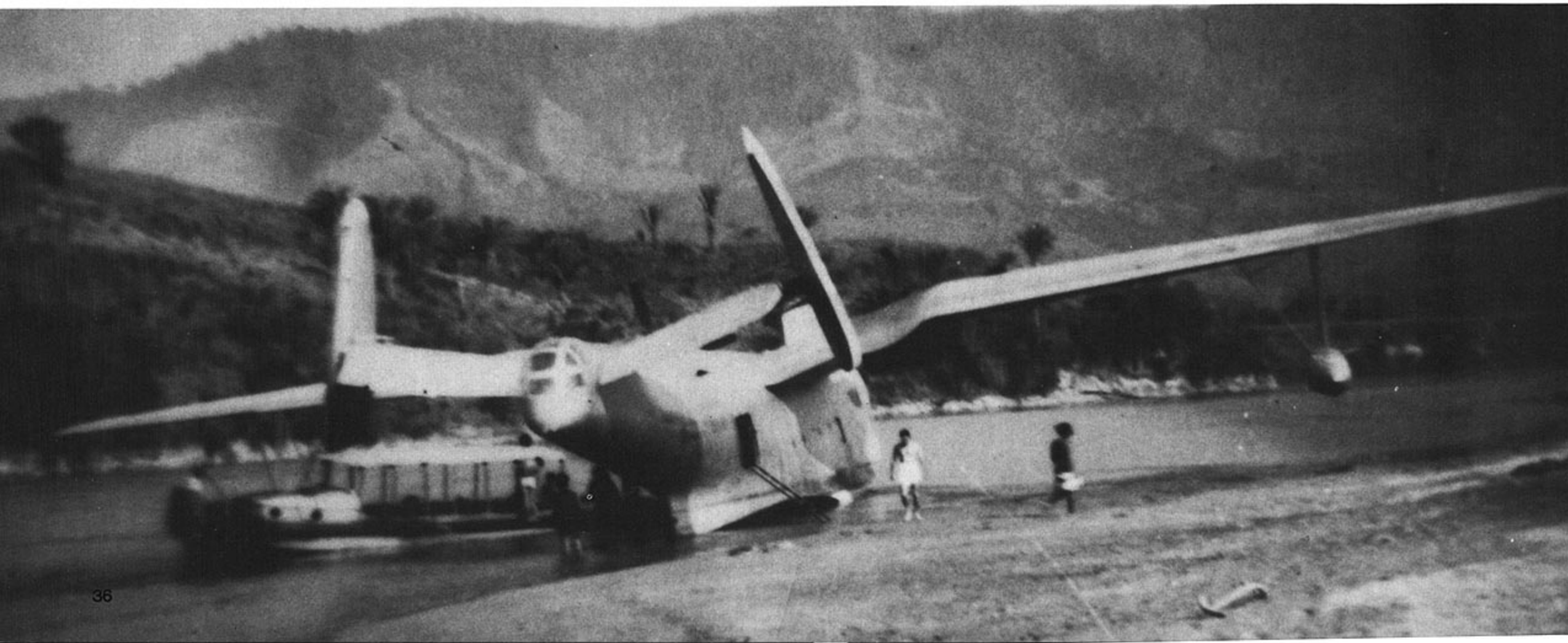




# Martin AIRCRAFT



PBM-5 Mariners were used commercially in Columbia, South America during 1947. The NAVIERA Columbian Division of a paddle wheel steamship company purchased seven surplus PBM-5s at Norfolk, Virginia. Stripped of over 5,000 pounds of weight, they were flown by three-man crews over cargo routes into the interior of Columbia, using the wide Magdalena River and its mud flats for beaching facilities. 20,000 pounds of cargo could be carried on these flights. River debris and primitive docking facilities took their toll, one Mariner damaged a wing during taxiing, a second Mariner sank, but both were returned to flight status. This airline was short lived and folded after less than a year of operations. (Chick Tkachick)



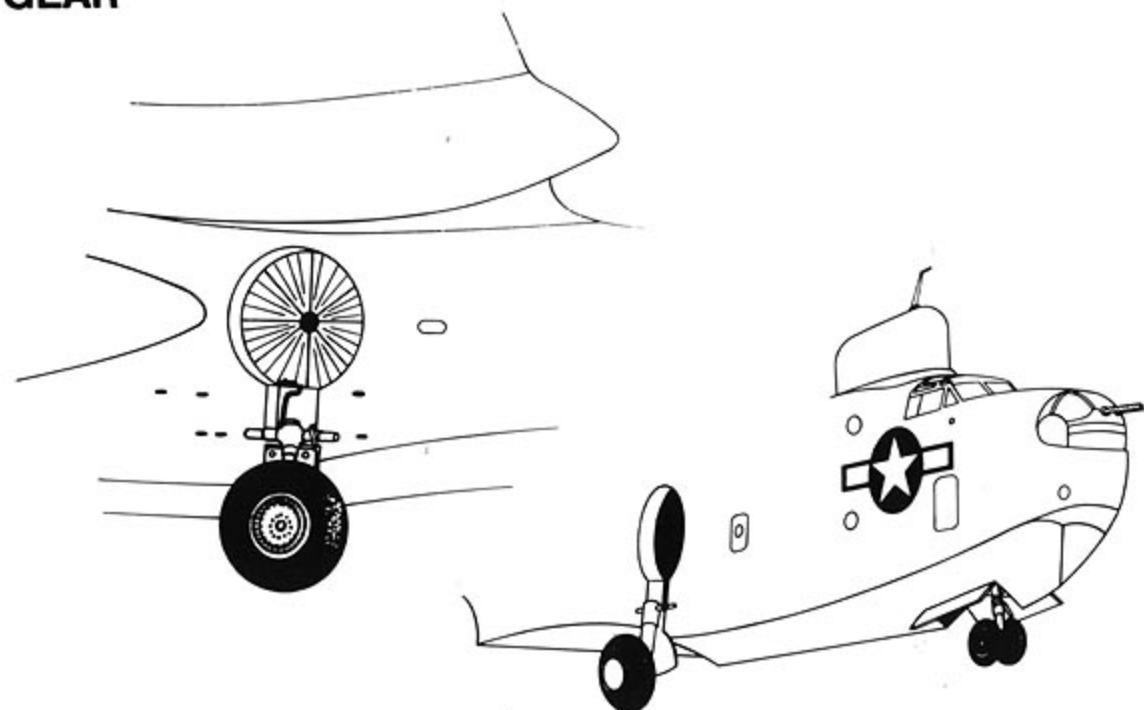
# PBM-5A Mariner Amphibian

The last production variant of the Mariner finally incorporated amphibious landing gear which had proven so effective on the PBY-5A Catalina. Forty examples of the PBM-5A Mariner Amphibian were eventually delivered, four were factory conversions of PBM-5s and thirty-six (BuNo 12067 to 12086, BuNo 122468 to 122471, and BuNo 122602 to 122613) were post-war orders. When production of the PBM-5A Mariner Amphibian ceased in April of 1949, it was the end of the remarkable twelve year production career of Martin's Mariner.



(Above) The XPBM-5A prototype amphibian was a modified PBM-5 providing the PBM series for the first time with amphibious capability. Carrying WWII markings and a 1947 National Insignia, it flew for the first in December of 1947. (USN)

## MAIN LANDING GEAR



(Below) Thirty-six production PBM-5A Amphibians were produced during 1948 and 1949. Production PBM-5As were powered by a pair of R2800-34 engines turning Curtiss Electric four-bladed (reversing) propellers, and had provisions for JATO. (Smithsonian Institution)





## POST WAR

Mariners were used extensively in the early occupational responsibilities from Northern Japan to coastal China and most points across the vast Pacific. They were supplemented by some of the forty PBM-5A amphibians, which were delivered in 1948 and 1949. VR-21 flew PBM-5As in support of the administration of the far-flung Marianas Trust Territory.

Mariners of VPB-32 were dubbed the 'Atomic Airline' when they were assigned as support for the Bikini nuclear tests known as CROSSROADS. PBM-5s of VPB-74 and VH-4 were used on Admiral Byrd's HIGH JUMP Antarctic 1946-47 exploring expedition. Mariners in OPERATION NANOOK during the fall of 1946 flew to within four hundred-fifty miles of the North Pole, the closest approach to the Pole ever made by a seaplane.

Three PBM-5 Mariners were transferred to the Uruguayan Navy, an undetermined number to the Argentine Navy, and seventeen to the Netherlands Navy. The seventeen supplied to the Netherlands in 1955-56 went to No. 321 Squadron at Biak in Dutch New Guinea. These Dutch Mariners replaced Lockheed PV-2 Harpoons. The Mariners would in turn be replaced by Lockheed P2V-7 Neptunes.

## KOREA

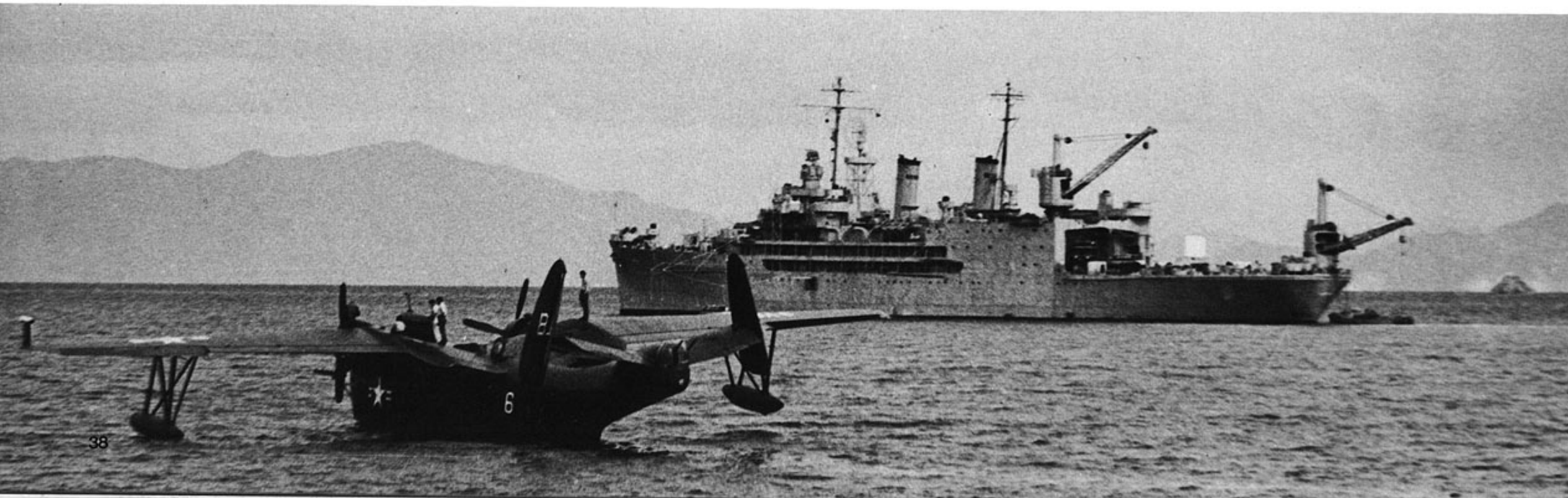
VP-47, based at Iwakuni, Japan, and equipped with PBM-5s was on the scene when the Korean War broke out. Six other squadrons, including some activated reserve units, rotated deployments during the Korean conflict. VP-47 had a second deployment with PBM-5S2 Mariners.

During the Korean War Mariner squadrons flew patrol routes of nine to twelve hours, deep into the China Sea, often along the shores of China, North Korea, and Manchuria. They also patrolled the Tsushima and Formosa Straights. A role new to Mariner crews and a delight to their gunners, was the detonation of mines with their .50 caliber machine guns. CDR M F 'Mickey' Weisner, later Commander-in-Chief Pacific, was CO of VP-46 in Korea from 15 July 1950 to 5 February 1951.

(Below) VPB squadrons were redesignated to VP soon after the end of WWII. Their primary responsibility became anti-submarine warfare, with mining as a secondary role. Mariners leaving the Martin Plant during late World War II were PBM-5E models. The significant difference being the installation of APS-15 radar gear and related bombing gear in the galley. Outwardly there were no visible differences to earlier PBM-5 models. A production PBM-5S was planned but cancelled, however later the PBM-5S was evolved by modifying existing PBM-5s. MAD (Magnetic Airborne Detection), seldom carried on the Mariner, can be seen on the left wing tip of this PBM-5S of VP-47 at Iwakuni, Japan in 1950. They are being tended by CURTISS (AV-4), one of the larger two-crane carriers. (USN via Raithel)



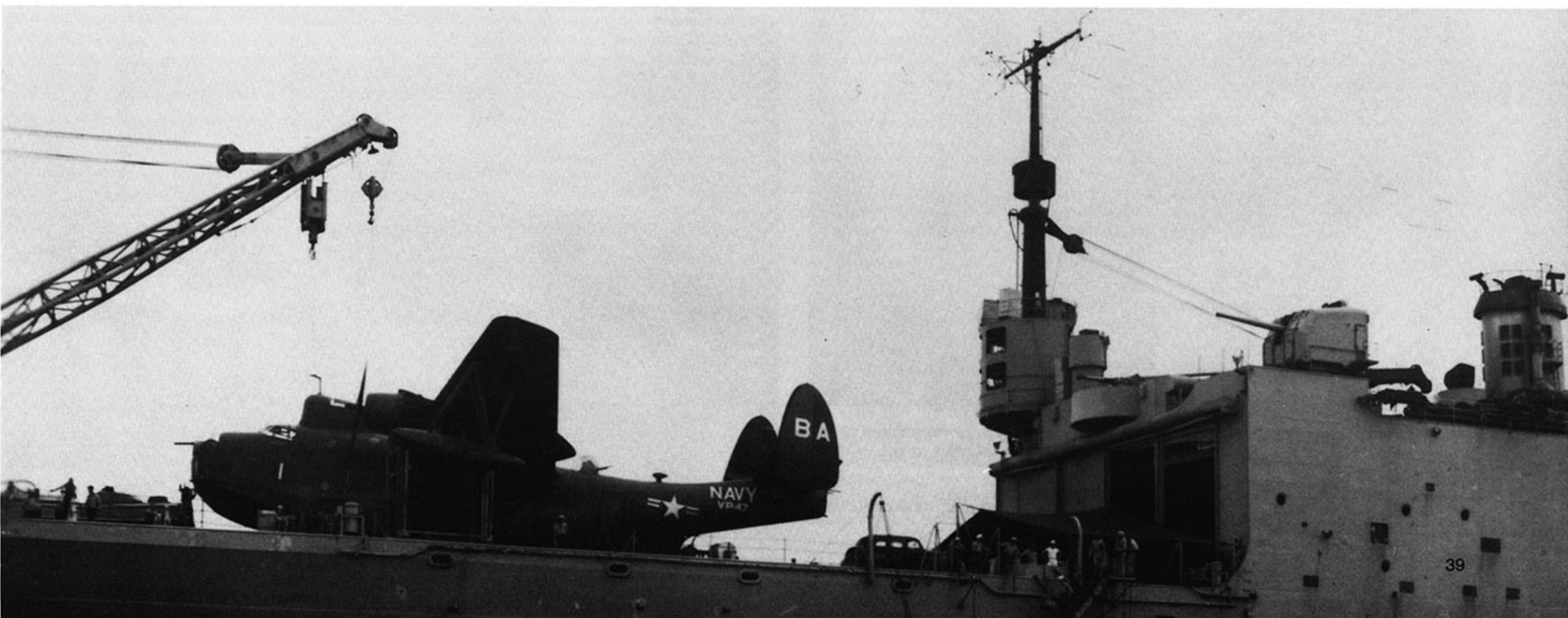
(Above) A PBM-5 (BuNo 59128) of VP-74 makes a JATO take-off in the Antarctic during OPERATION HIGH JUMP on 24 December 1946 at approximately 65 degrees South, 165 degrees East. Flown by Crew 2, it was tended by USS CURRITUCK (AV-7) with LCDR D E Bunker as the PPC. (USN)



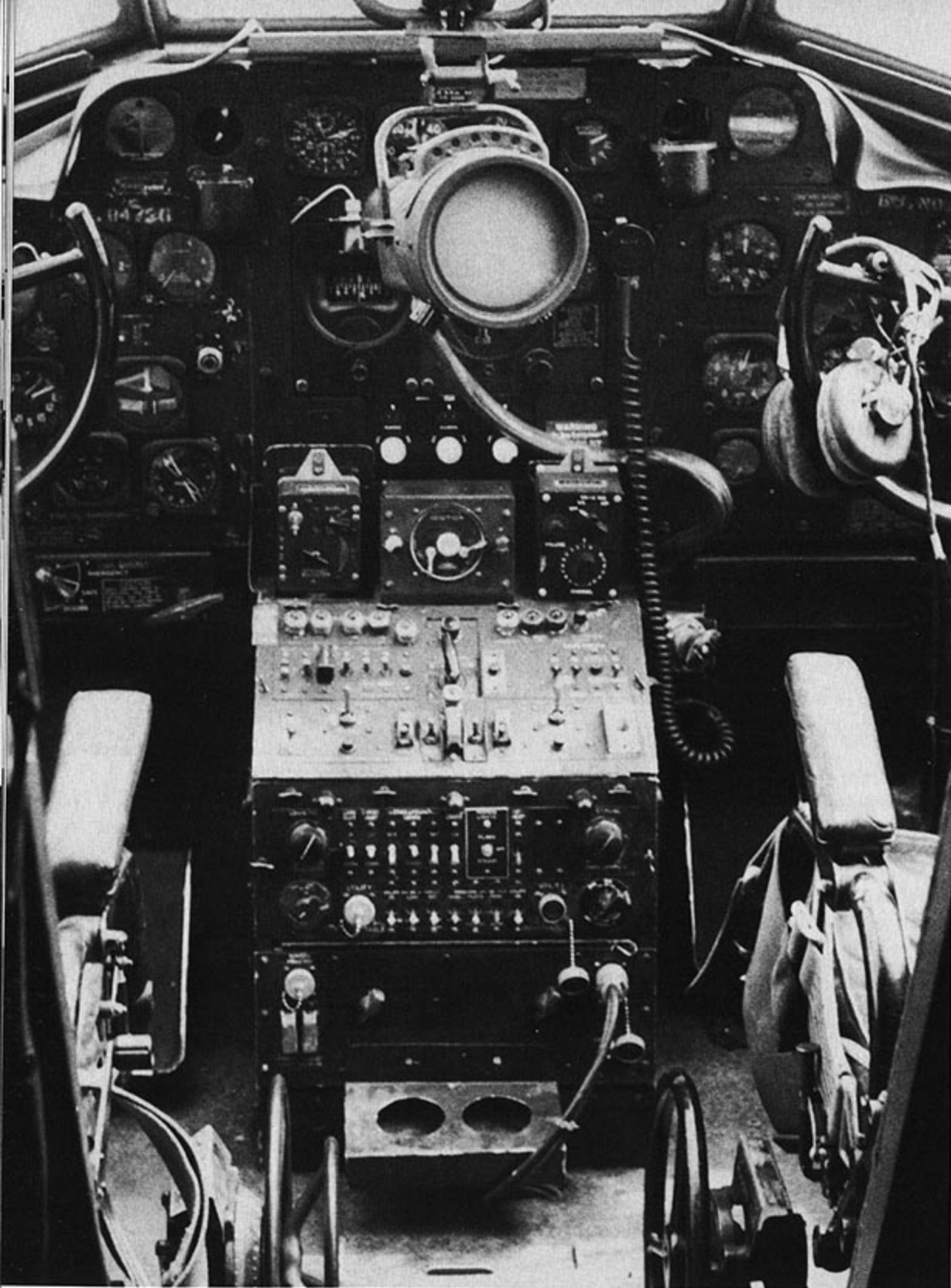




The tender USS SALISBURY SOUND (AV-13) at Buckner Bay, Okinawa hoists the Mariner belonging to the Commanding Officer of VP-47, CDR W T Hardaker. P1 (BuNo 84682), carries the squadron tail codes of BA. November, 1951. (USN)







(Above) The cockpit of a PBM-5S2 belonging to VP-47 shows the arrangement of the 'ultimate' Mariner cockpit. The APS-15 radar scope is mounted in the center. (Bruce Warren)

(Right) AD-2C Flight Engineer Bruce Warren is seen at his station during a Korean War patrol. (Bruce Warren)



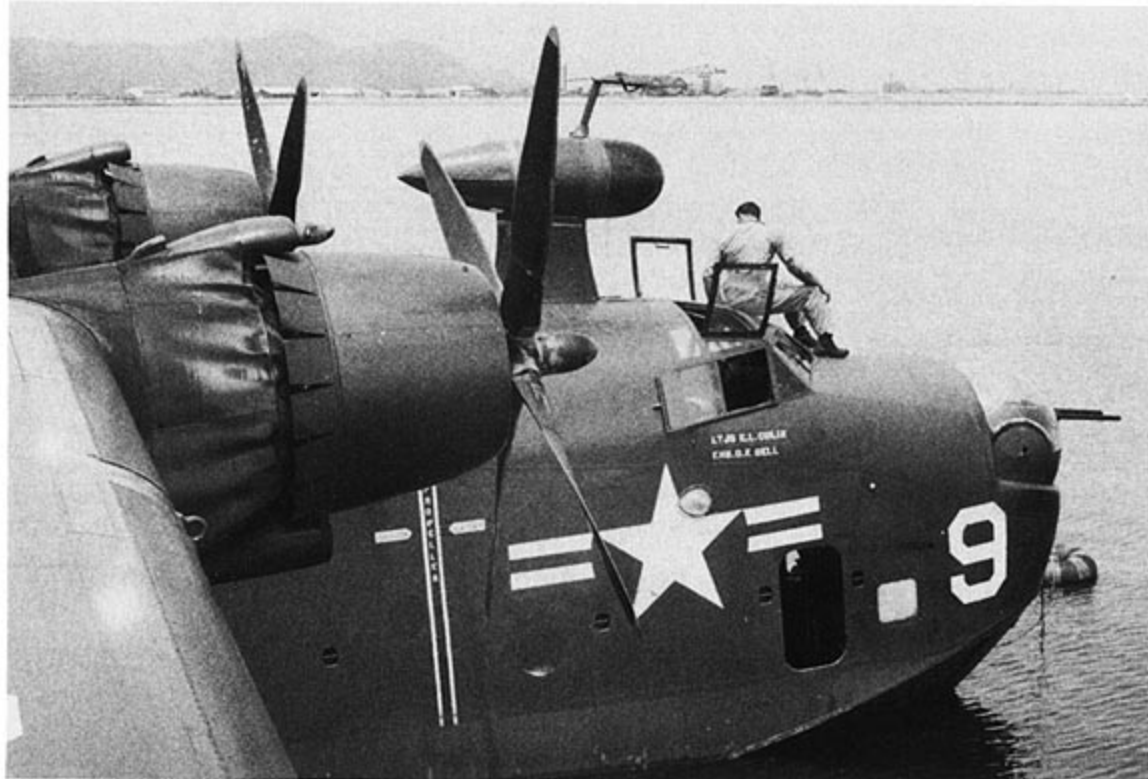
(Above) R L 'Ray' Jones, is at the radio position. (Bruce Warren)



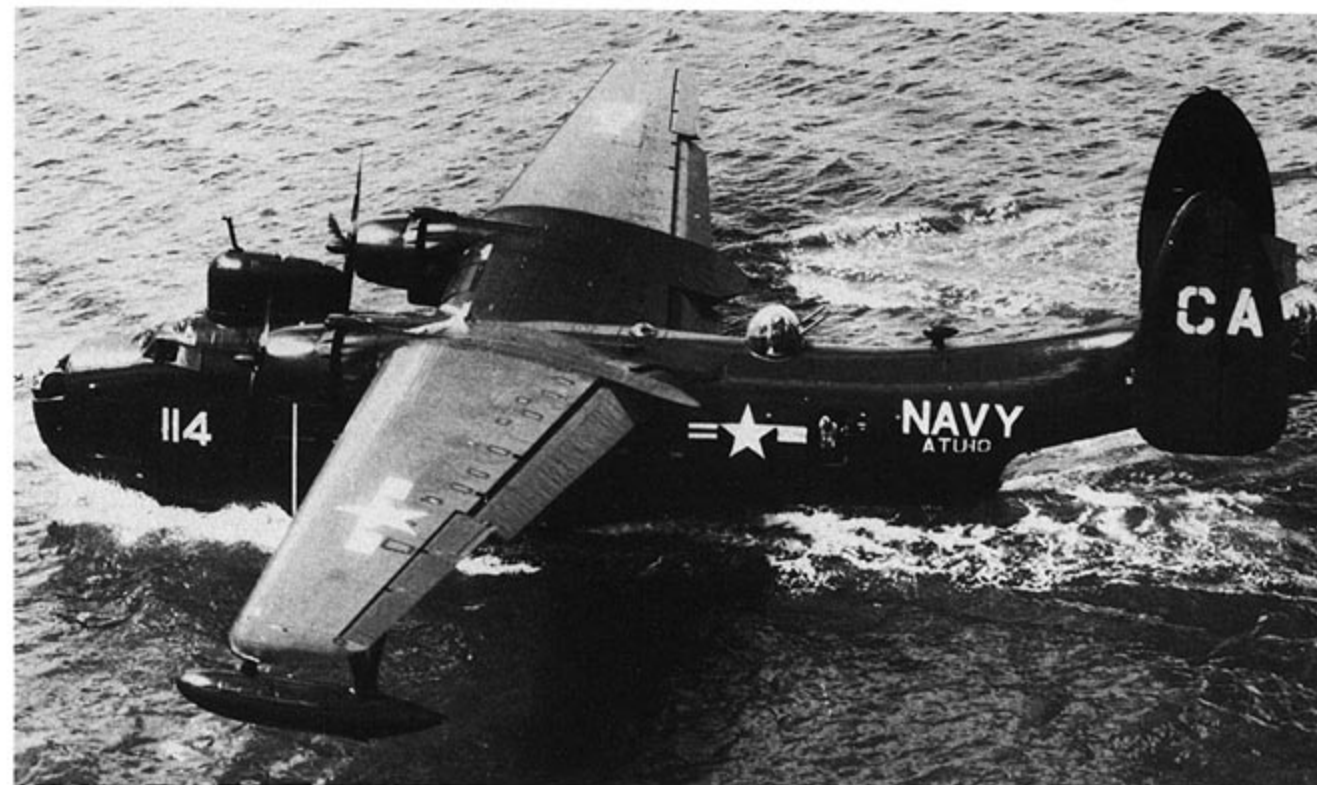
(Above) John Grove, was responsible for the port waist gun. The four JATO mounting plates can be seen on the inward opening waist hatch. (Bruce Warren)



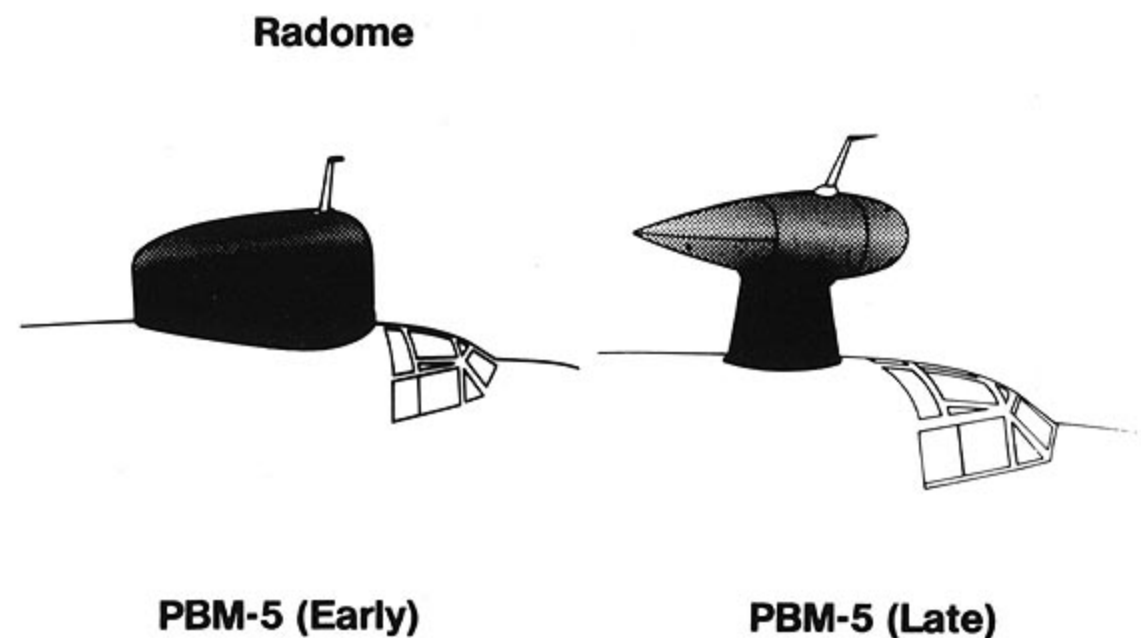
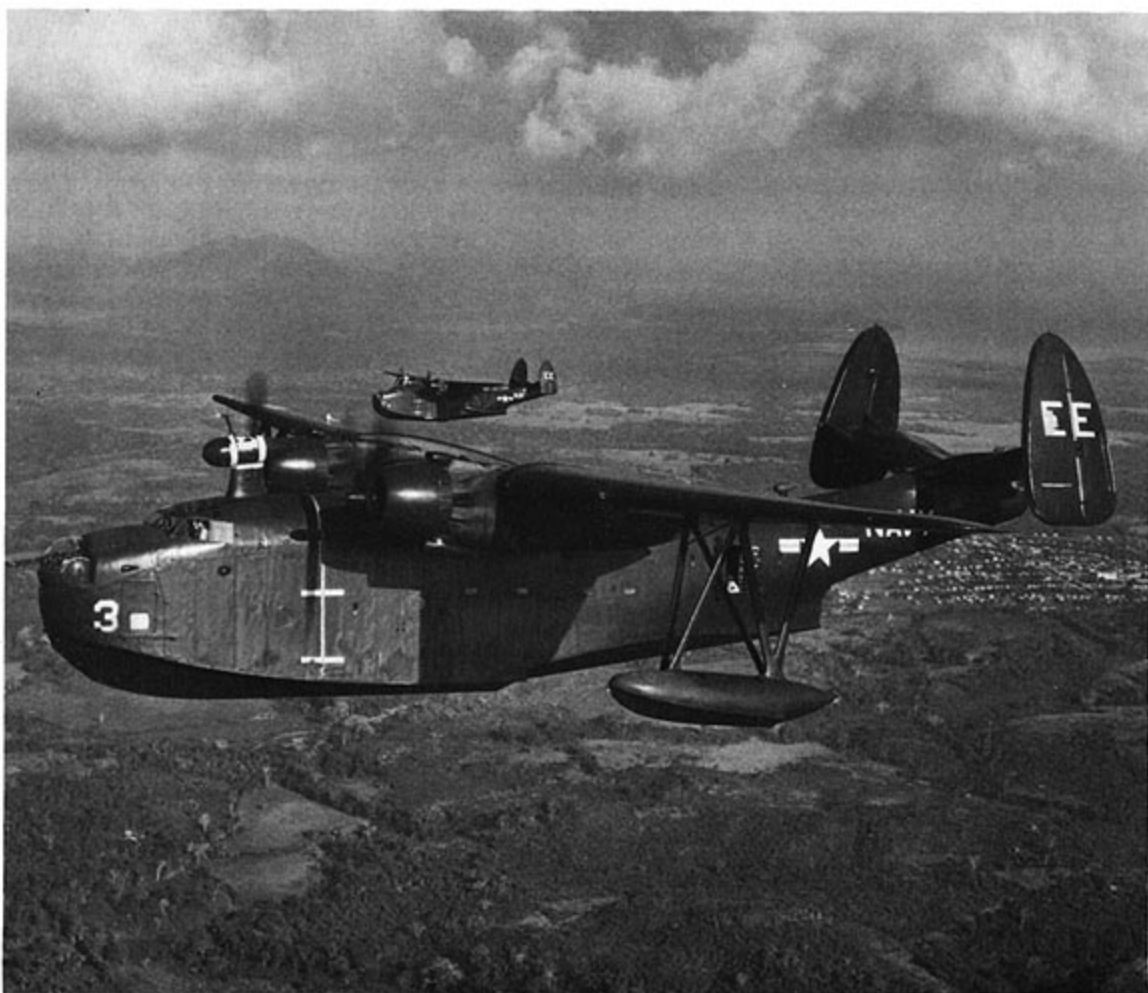




(Above) A PBM-5S2 Crew 9 Mariner of VP-47 during 1953 at Iwakuni, Japan. Ordnanceman Tex McMillan is sitting on the bow. (Bruce Warren)



(Above) This PBM-5 belongs to ATU-10 out of Corpus Christi, Texas. The spacious Martin turrets were used on all late model PBM-3C, PBM-3D and PBM-5s. (Smithsonian Institution)



PBM-5 (Early)

PBM-5 (Late)

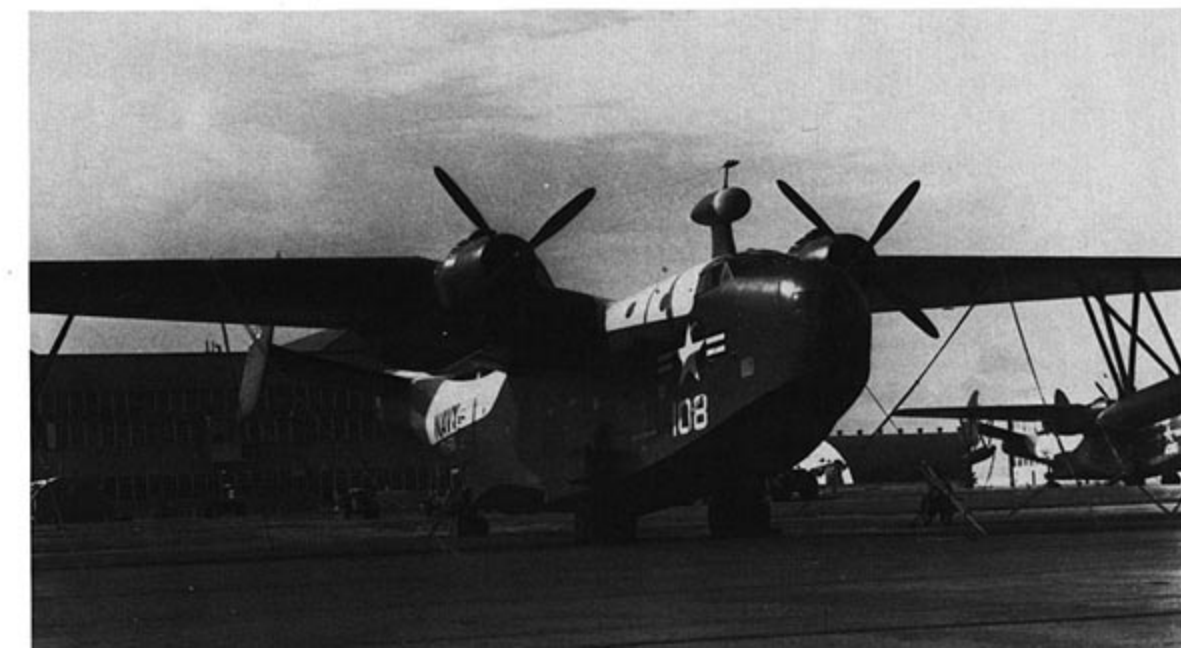
(Left) In its final patrol configuration, the PBM-5S2 (BuNo 98611) Mariner, is being flown by PPC Al Raithel of VP-45 off Coco Solo, Canal Zone during 1954. The deck turret has been removed, and a new nacelle-shaped radar housing contains the APS radar. The code letters EE on the tail denote Patrol Squadron Forty-Five (VP-45). (USN)





(Above) A Coast Guard PBM-5G (BuNo 9158) is being washed down on the ramp. (Mark Aldrich)

(Below) This PBM-5 Mariner is believed to have been modified as a PBM-5S2. Its turrets have been removed, and ATU-501 has re-painted it in the SR-202 color scheme, which called for White upper surfaces, it had been Dark Blue overall. (USN)







(Above) A PBM-5S2 Mariner of VP-45 being refueled by the Seaplane Tender TIMBALIER (AVP-54), one of the last AVPs built. PPC LT Bob Stiles is sitting on the bow, first pilot Al Raithel is standing in the starboard pilot's seat, and an unidentified pilot is holding a megaphone. The nacelle shaped radome has a radio antenna pole mounted on top. The 'Shannon Fix' vortex airfoils can be seen on the horizontal tail surfaces next to the vertical stabilizer, as can the stall-warning spoilers mounted on the leading edge of the gull wing. (USN)

At least two PBMs are under the fresh water of Lake Washington, ten miles from Seattle. One is in 70 feet of water on its back, and another is just a little deeper. These are two of at least 109 Navy aircraft to be found in the lake. These two PBM-5 flying boats, when discovered by divers, were in excellent condition. One of these is currently targeted for retrieval, restoration to display status, and transport by aircraft carrier to the Naval Aviation Museum at Pensacola, Fl.

(Right) There is only one PBM Mariner left in the United States, a PBM-5A Amphibian owned by the Smithsonian Air and Space Museum, and currently on loan to the Pima Air Museum in South Tucson adjacent to the Davis-Monthan Storage Base. This aircraft was one of the last to be used and has had its turrets removed.





# P5M-1 Marlin

The big flying boats had performed yeoman service during World War II, but by 1946 the Catalinas, Coronados, as well as many of the earlier Mariners, were old and tired, and the Glen L. Martin Company was in a unique position to sell the Navy a replacement. Under the company designation Model 237, Martin set about the task of designing a flying boat for the post war Navy.

## XP5M-1

A contract for a prototype, under the Navy designation XP5M-1, was awarded to Martin on 26 June 1946. Using a heavily modified extended Mariner Hull (BuNo 98616) and a pair of standard Mariner gull wings Martin engineers designed a worthy successor to the Mariner. The long after body of the Model 247 provided a hull that operated much more smoothly in rough water, reducing the tendency to porpoise, which had always plagued the flying boat. For the first time the Martin designed 'Hydroflaps' were used. These Hydroflaps, which were extendable flap-like appendages located below the waterline at the rear end of the hull, acted as water brakes helping to slow the seaplane down after landing, but more importantly these flaps could be extended one at a time or together, and when used in combination with the Model 247's reversible pitch propellers, made the Marlin extremely maneuverable on the water without the use of the trusty but archaic canvas 'sea anchor' that had been used since the inception of seaplanes.

Powered by a pair of the tried and proven R3350-30 supercharged engines of 2700 hp each, the prototype flew for the first time at Middle River, Maryland on 30 May 1948. Armament was initially radar controlled power turrets in the nose, tail and dorsal position with 20MM cannons. The nose and dorsal turrets were later removed from the Prototype and deleted altogether from the design. Eventually the dorsal turret was also removed. The big boat was easy to fly using power boosted controls and spoiler ailerons.

A streamlined nacelle housing mounted behind the cockpit contained electronic counter measures equipment.

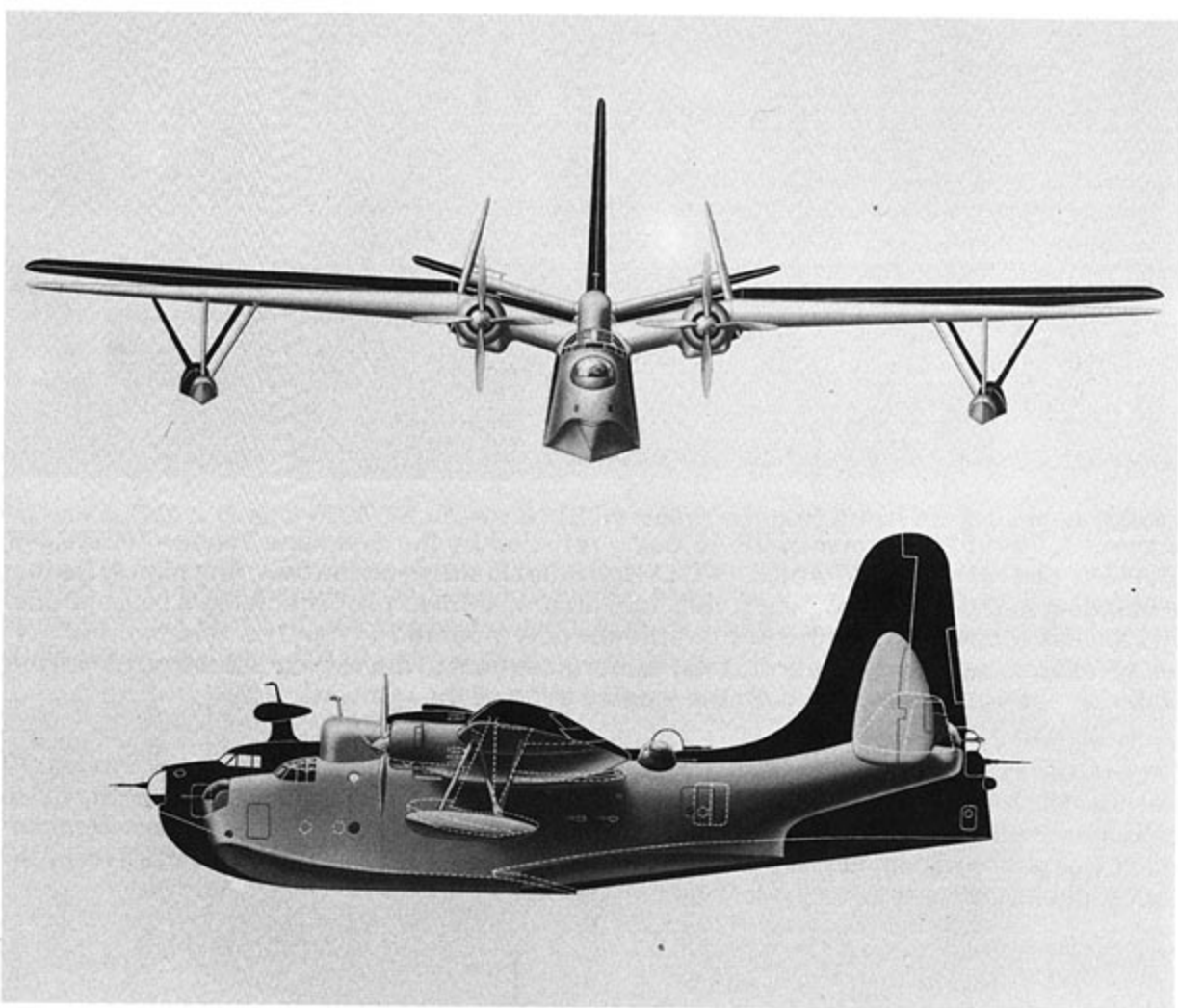
## P5M-1 Marlin

After some eighteen months of testing, evaluation, and modification, a refined version of the prototype was ordered into production. The bow turret was replaced by a bulbous nose section which housed a large search radar antenna and provided the Marlin with its distinct profile. Similar to the prototype the P5M-1 tail assembly consisted of a tall single fin and rudder, with a low conventional horizontal stabilizer. To improve visibility the cockpit was raised. Power was provided by a pair of up-rated Wright Cyclone R-3350-30W turbo-compound engines of 3,250 hp each, mounted in elongated nacelles under the wings which housed large bays that could carry either bombs, mines, or long range fuel tanks.

The P5M-1 Marlin weighed nearly 74,000 pounds, had a maximum speed of 234 mph, a cruising speed of 150 mph, and a range of 3,000 miles. One hundred twenty-one P5M-1 Marlins were produced, beginning in 1952. Magnetic Airborne Detection (MAD) was carried on some P5M-1s mounted on top of the huge tail.



(Above) Built from the Mariner using PBM-5 wings, floats and basic hull (BuNo 98616) the XP5M-1 prototype of the Marlin first flew in 1948. The hull was lengthened by eleven feet and considerable after hull was added to the step area. A nearly flush bow and tail turret were installed, as well as a deck turret. Spinners were used on the propeller hubs and a nacelle shaped radome was installed behind the cockpit. (Smithsonian Institution)



(Above) The Mariner/Marlin relationship was an intimate one, with it often being suggested that the Marlin was a grown-up and mature Mariner. A PBM wing and hull were used as the basis of the XP5M-1 Marlin prototype. However, the hull was lengthened, and the step was extended to the end of the hull. The tail was completely redesigned with a tall single tail being used. The twin R3350-30 super charged engines permitted the Marlin to increase gross weight to 80,000 pounds. (Martin Marietta)



## COST GUARD MARINERS AND MARLINS

Coast Guard use of the PBM began with the transfer of twenty-seven PBM-3S aircraft during the early months of 1943. Forty-one PBM-5s, equipped with JATO were delivered in 1945, with the PBM-5 being re-designated to PBM-5G by the Coast Guard. Some of the Navy's PBM-5A amphibians were also transferred, probably in the early 50s. It was customary for the Coast Guard to transfer their flying boats back to the Navy when no longer required, or when new models were made available.

A Coast Guard pilot who served as the commanding officer at San Diego, during post WWII, Captain Donald R McDiarmid, was undoubtedly the best seaplane authority in the Coast Guard. McDiarmid had flown many rescue missions during WWII, and continued to perfect the 'controlled crash' of the open sea landing and take-off. One rescue mission of his was made 1,150 miles out in the open sea, making a medical evacuation of four men from a ship.

Some Coast Guard PBM-5Gs were equipped with Curtiss electric four-bladed reversing propellers, providing Coast Guard pilots with the option of using full reverse for about twenty seconds when they were about twenty feet above the sea before landing. This 'full reverse' procedure helped to stop the Mariner much quicker, and prevented some of the crash-type bounces. It also created a spectacular display of water over the cockpit and bow of the boat.

Seven P5M-1G Marlins were assigned to the Coast Guard in 1954 (BuNo 1284, 1285, 1286, 1274, 1295, 1296 and 1297). These P5M-1Gs were replaced by four P5M-2Gs (BuNo 1312, 1318, 1319 and 1320) in 1961.

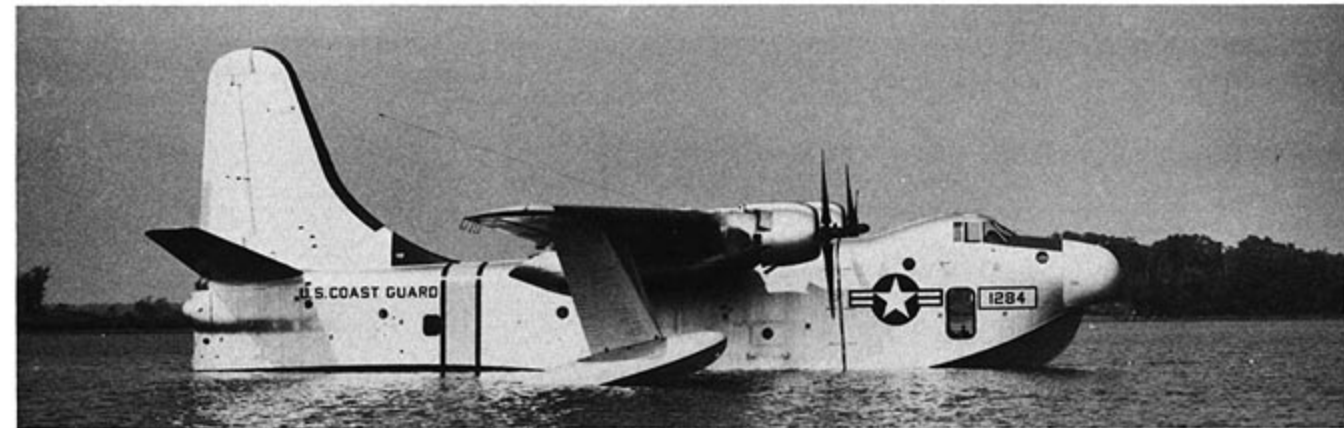


(Above) A P5M-1 Marlin (BuNo 135456) of VP-45 at Coco Solo, Canal Zone during early 1955. This Marlin is equipped with a searchlight on the wing and Magnetic Airborne Detection (MAD) equipment mounted on top of the tall tail. (USN)

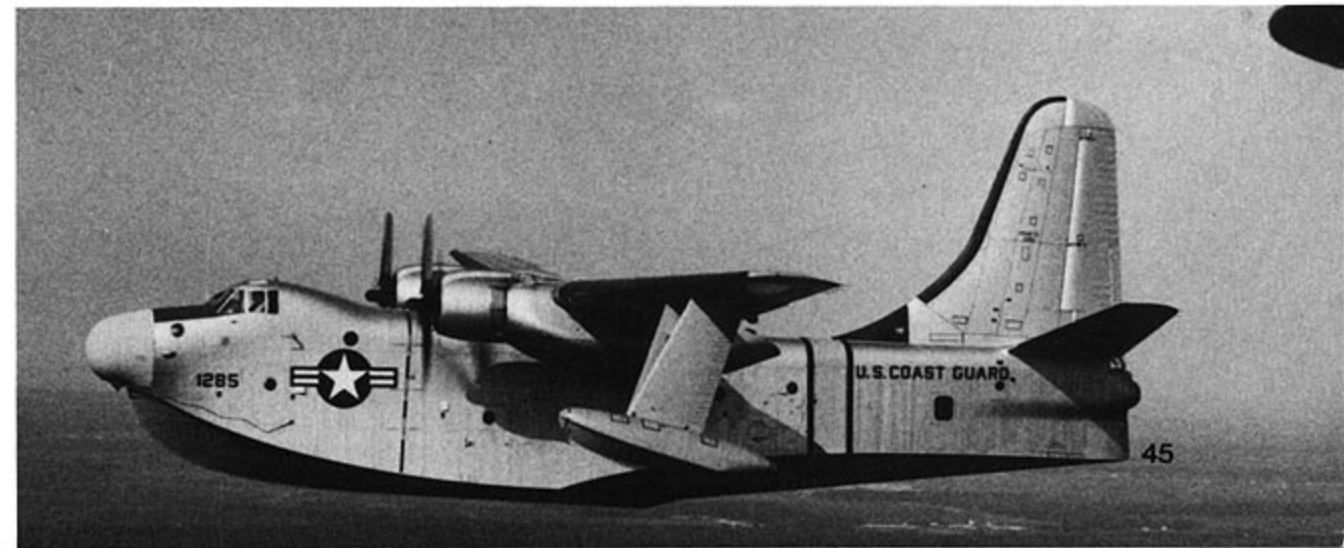
(Below) P5M-1 Marlin of VP-40 seen on the ramp with its beaching gear in place. The tail beaching gear was mounted at the extreme rear of the long step. (USN)



(Below) Painted overall Silver this Coast Guard P5M-1G (BuNo 1285) Marlin rests on calm water.



(Below) P5M-1G Marlin (BuNo 1285) of the Coast Guard. (Mark Aldrich Collection)





# P5M-2 Marlin

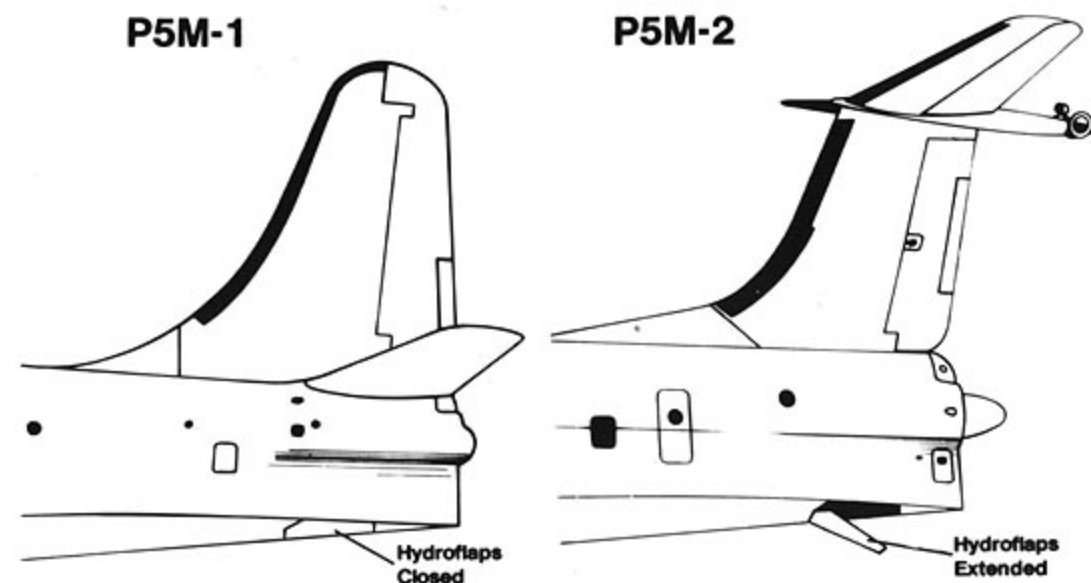
During 1953 Martin carried out a major revision of the Marlin changing production over to the P5M-2, and producing what would be their last aircraft. The bow chine was lowered in order to reduce the amount of spray going into the propeller and engines, and a new 'T' tail with the horizontal stabilizer being mounted atop the fin was installed. A pair of 3,450 hp R-3350-32 WA engines provided power. One hundred seventeen P5M-2s were delivered with the first machines deploying in 1954.

Primarily designed as an anti-submarine aircraft the Marlin was equipped with the latest electronic equipment. An AN/APS-44 radar antenna was mounted in the bulbous nose, which could detect a target as small as a submarine's snorkel. A MAD sensing head was contained in a tapered cylindrical boom protruding aft from the 'T' juncture of the fin and stabilizer. P5M-2s were deployed to Vietnam during the early days of hostilities in southeast Asia. On 18 September 1962, under the Navy's new aircraft designation system, the P5M-2 Marlin was redesignated to the SP-5B Marlin.

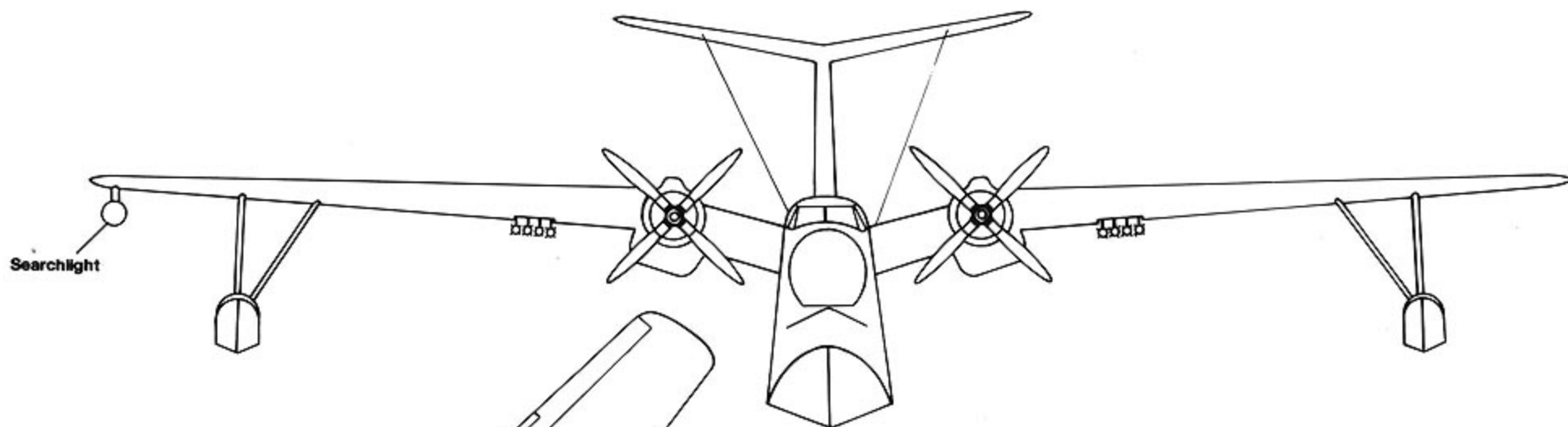
Patrol Squadron Forty (VP-40) was the Navy's last 'boat' squadron. Shore based at Naval Air Station Sangley Point, Cavite, The Philippines, advance base detachments were tended by the CURRITUCK (AV-7) VP-40 flew its last Marlin mission in May of 1967, ending Navy flying boat operations.

(Right) A P5M-2 with its engine nacelle bomb bay doors open shows the Marlin's cavernous bomb bays. (Smithsonian Institution)

(Below) This P5M-1 (BuNo 5542) of VP-48 carries tail codes SF in Black. Upper Surfaces are White over lower surfaces of Light Gray, and the trim on the tail is a chevron of Red, White, and Blue (front to rear). (Mark Aldrich Collection)



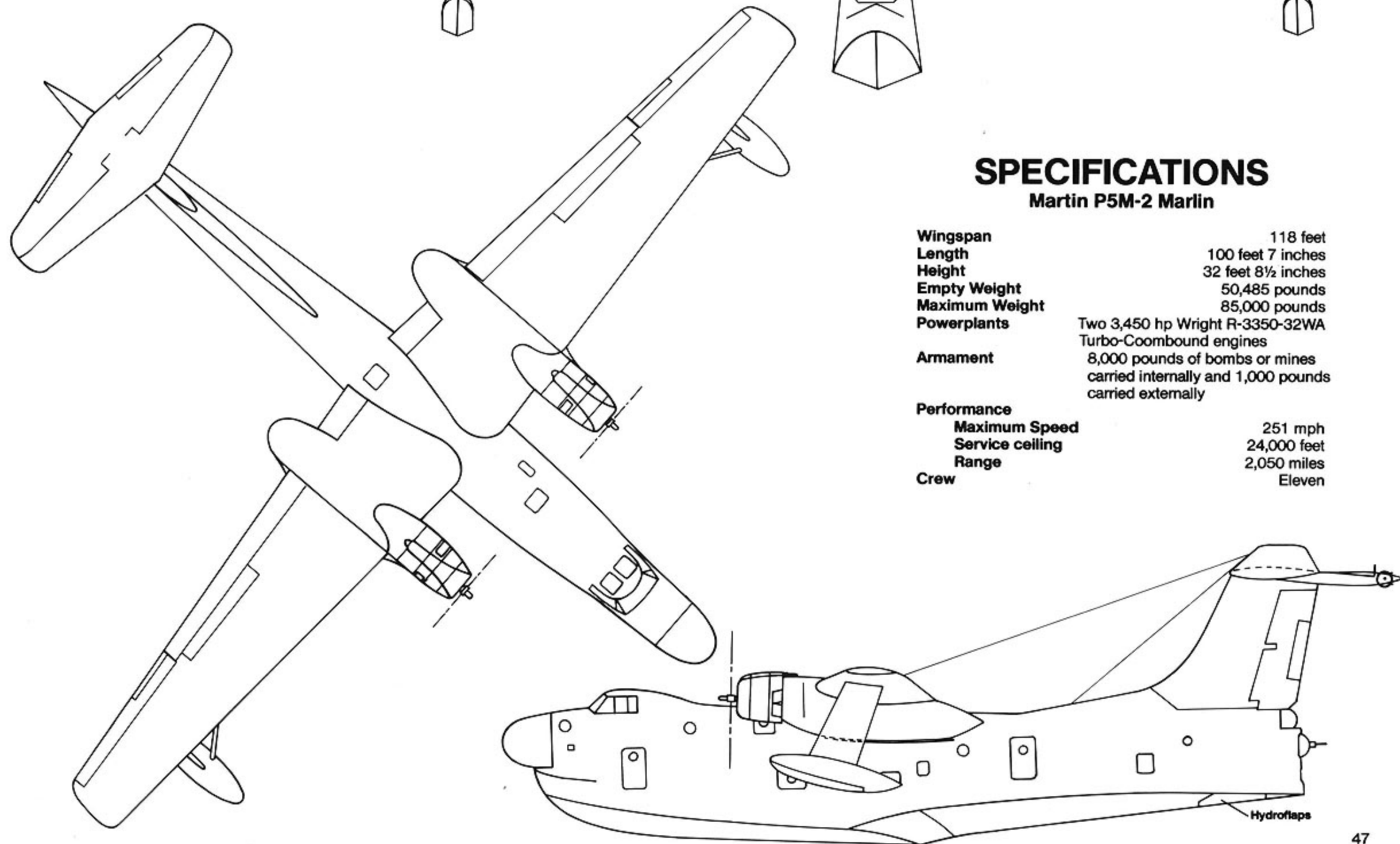




## SPECIFICATIONS

### Martin P5M-2 Marlin

Wingspan	118 feet
Length	100 feet 7 inches
Height	32 feet 8½ inches
Empty Weight	50,485 pounds
Maximum Weight	85,000 pounds
Powerplants	Two 3,450 hp Wright R-3350-32WA Turbo-Coombound engines
Armament	8,000 pounds of bombs or mines carried internally and 1,000 pounds carried externally
Performance	
Maximum Speed	251 mph
Service ceiling	24,000 feet
Range	2,050 miles
Crew	Eleven

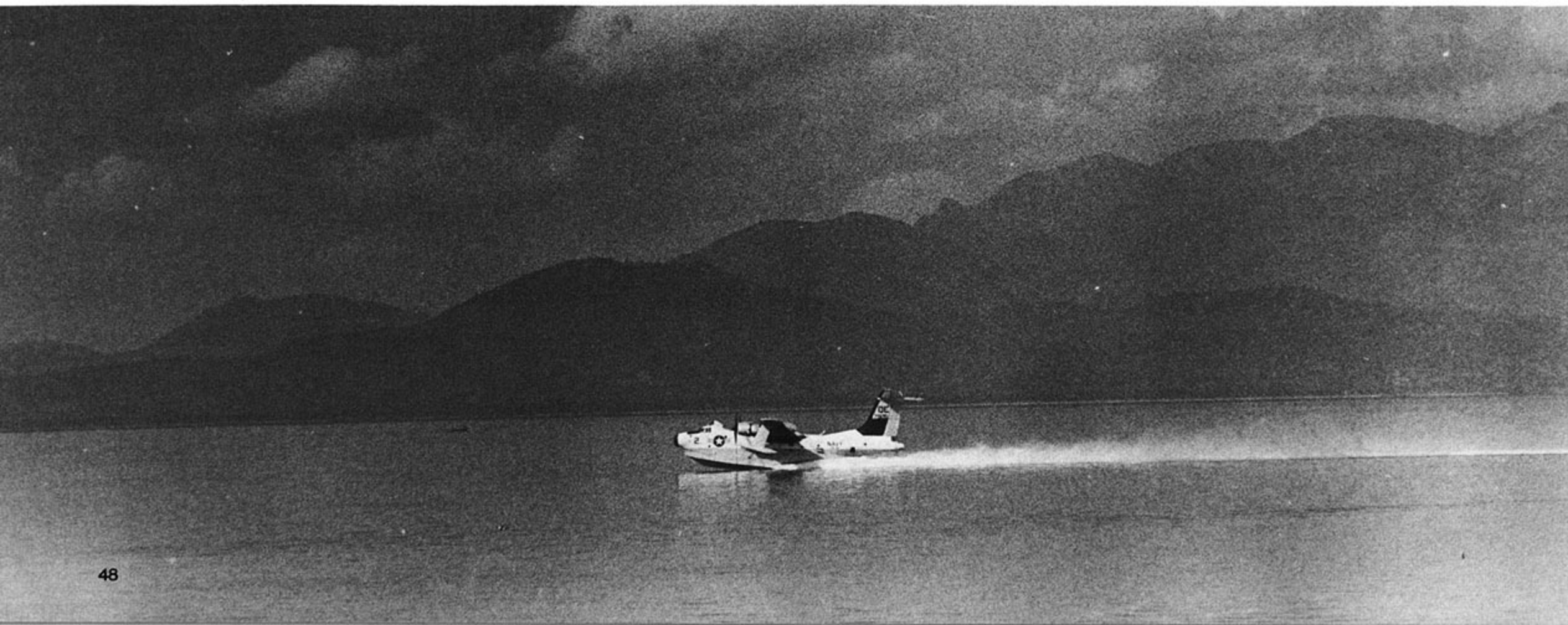






(Above) SP-5B of VP-31. Red High-Visibility paint was added to the nose, wings, and tail of some Marlins assigned to training. (Bill Couch)  
 (Below) The twilight of a Navy design, an SP-5B of VP-40 on 5 July 1967 is taxiing to its buoy area on Cam Ranh Bay, South Vietnam. VP-40 was tended by USS CURRITUCK (AV-7) which was based at Sangley Point, Cavite, PI. Marlins remained in service with the US Coast Guard, but VP-40's retirement ended seaplane operations for the US Navy that had begun in 1911 with the purchase of a hydroplane. (USN)

(Above) Carrying upper surfaces in White, lower surfaces in Black and Red trim, this colorful Marlin (BuNo 7931) carries the White RP tail codes of VP-31. A ladder can be seen at the rear entry hatch. (Mark Aldrich Collection)





# Martin Mars

On 23 August 1938 the Navy ordered a long-range maritime reconnaissance patrol bomber from Martin. Known as the Martin Model 170, the design was designated the XPB2M-1 (BuNo 1520) flying boat and named the 'Mars' by Martin. The prototype was built as a patrol bomber with provisions for turrets, but carried no internal armor protection. It was powered by four Curtiss Wright 3350-8 Duplex engines developing 2,200 hp with reversing 16 feet, 8 inch propellers, with an operational gross weight up to 145,000 pounds. The Twin-tail Mars prototype flew for the first time on 3 July 1942, giving Glenn Martin another 'first' — the world's largest aircraft.

The Navy requested that the Mars be finished as a transport rather than a bomber, changing her designation to XPB2M-1R cargo transport. By November of 1943 the XPB2M-1R, with her capacious hull bomb bays sealed, the 'Old Lady', as she had become known, was making long distance flights and proving her cargo transport capabilities.

The Navy accepted the XPB2M-1R prototype at Patuxent River in December 1943. Her first Navy flight was to Natal, Brazil at a gross weight of 148,000 pounds. Carrying a payload of 13,000 pounds the non-stop distance of 4375 miles, the 'Old Lady' broke all existing seaplane records. In early 1944 a 4700 mile round trip to Hawaii was made in 27 hours 26 minutes with a 20,500 pound load.

Structural strength tests at Martin prompted Glenn Martin to observe that the, *Mars is the most efficient airplane in the world, per pound of weight, per horsepower and per gallon of fuel consumed. She has also proven herself one of the safest.* The XPB2M-1R was transferred to VR-2 at Alameda, California in January of 1944.

Impressed with the Mar's capacity the Navy ordered twenty production aircraft built from the ground up as cargo transports under the designation JRM-1 in 1944, but the war's end cut this production to five JRM-1s and a single JRM-2, with the first JRM-1 not taking to the air until after the end of hostilities.

Each aircraft was named after a Pacific island. The first JRM-1, Hawaii Mars (BuNo 76819), crashed during its early flight tests in Chesapeake Bay. Four other JRM-1s, Philippine Mars (BuNo 76820), Marianas Mars (BuNo 76821), Marshall Mars (BuNo 76822), Hawaii #2 (BuNo 76823), and the JRM-2 Caroline Mars (BuNo 76824). All were assigned to VR-2.

The Marshall Mars was lost on a test flight from Honolulu in April of 1950 when a fuel leak and resulting fire destroyed her. The other four went on to distinguish themselves during the Korean War, carrying loads that included carrying 132 seated troops or 84 stretcher patients and 25 medical attendants. The remaining JRMs served until November of 1956, when they were purchased by Forest Industries Flying Tankers, a Canadian Company, to be used as serial fire fighters. The Caroline Mars was destroyed in a storm and the Marianas Mars crashed during a fire flight, but the other two are fitted with water scoops that permit 7,000 gallons of water to be used in fire fighting. They are painted Fire Engine Red and White, and when not flying, are moored on Sprout Lake near Port Alberni, British Columbia.

PBY-5  
Catalina



PBM-5  
Mariner

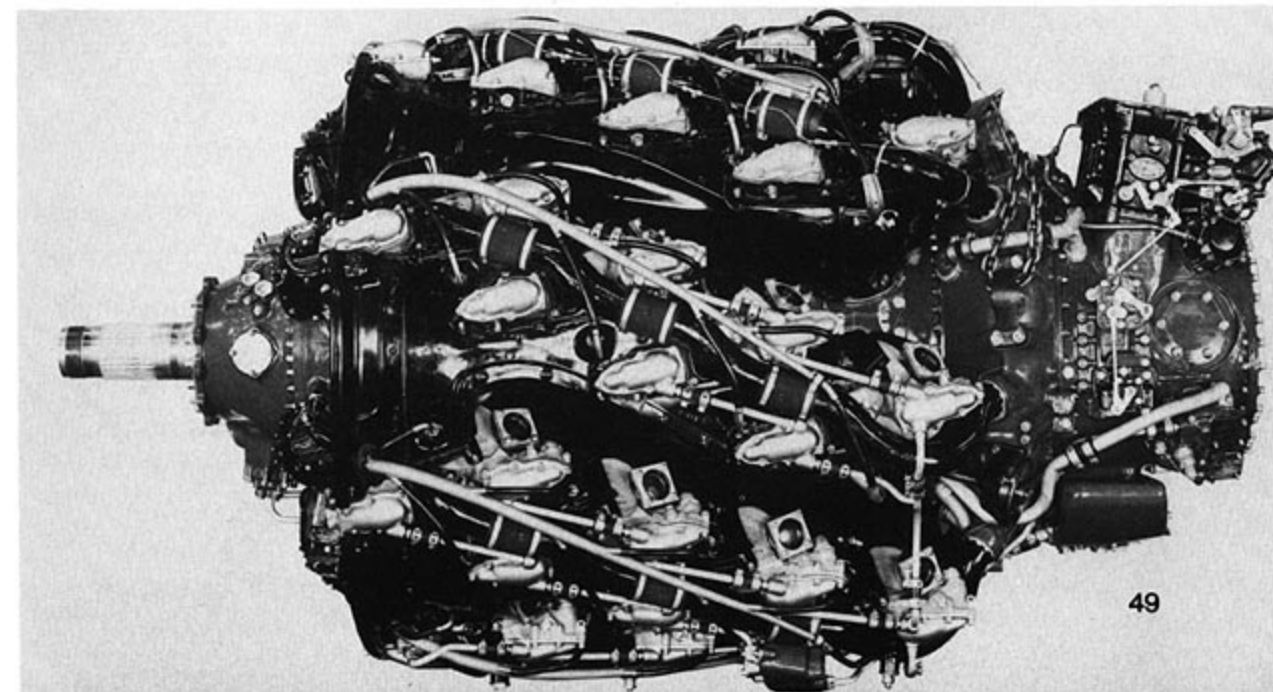


JRM-1  
Martin  
Mars

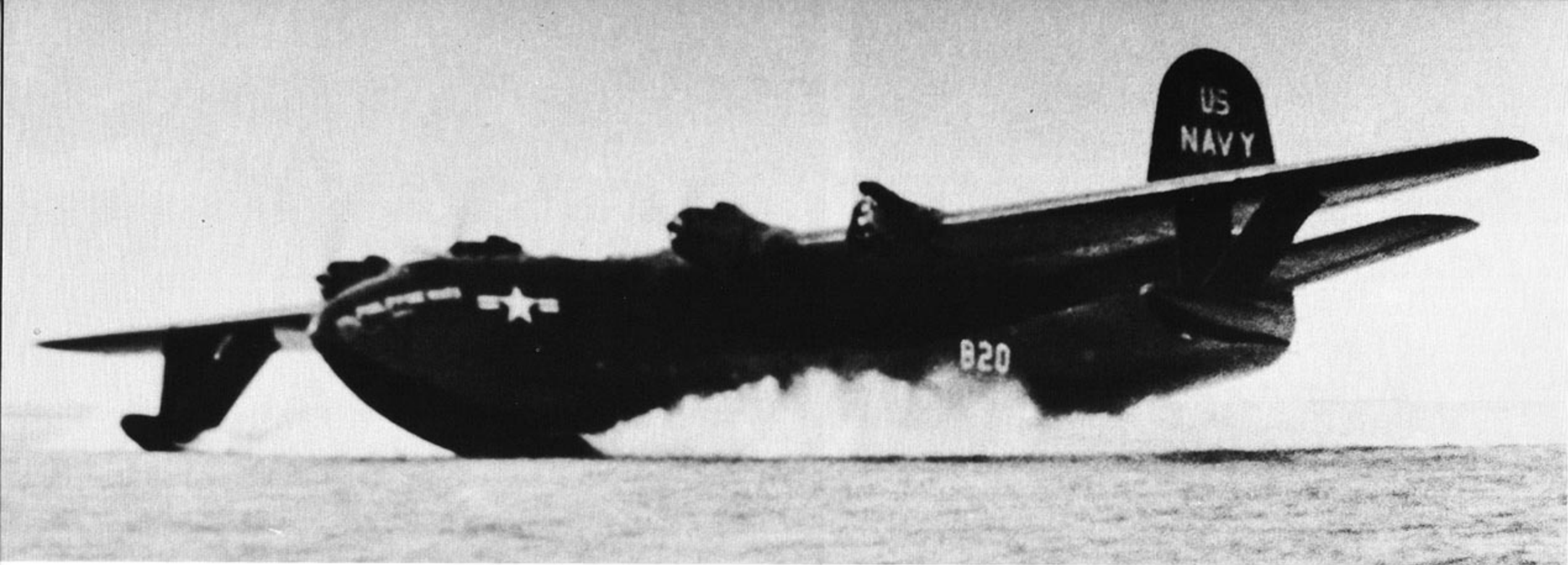


(Above) The XPB2M-1R prototype of the mighty Martin Mars, is seen after being stripped of all armament. Accepted by VR-8 at Patuxent River in 1943, it was the world's largest airplane and immediately began setting a series of records. The 'Old Lady', as she had been dubbed by Martin's Chief Test Pilot, Ken Ebel, set a new distance record for cargo flying to Natal, Brazil, a 4,375 mile flight. This exceeded the previous seaplane record by fifty percent. LCDR Bill Coney of VR-8 was Plane Commander on this flight. The Black stripes on the top of the wing outlined the 'walk area'. (USN)

(Below) The Pratt & Whitney R-4360-4 engine with four offset rows of seven cylinders which provided the basis of the nickname 'Corn Cob'. It developed 3,000 hp and provided power for the single JRM-2 Mars that was built. Similar engines were used on the giant Howard Hughes 'Spruce Goose' flying boat. (United Technologies Archives)



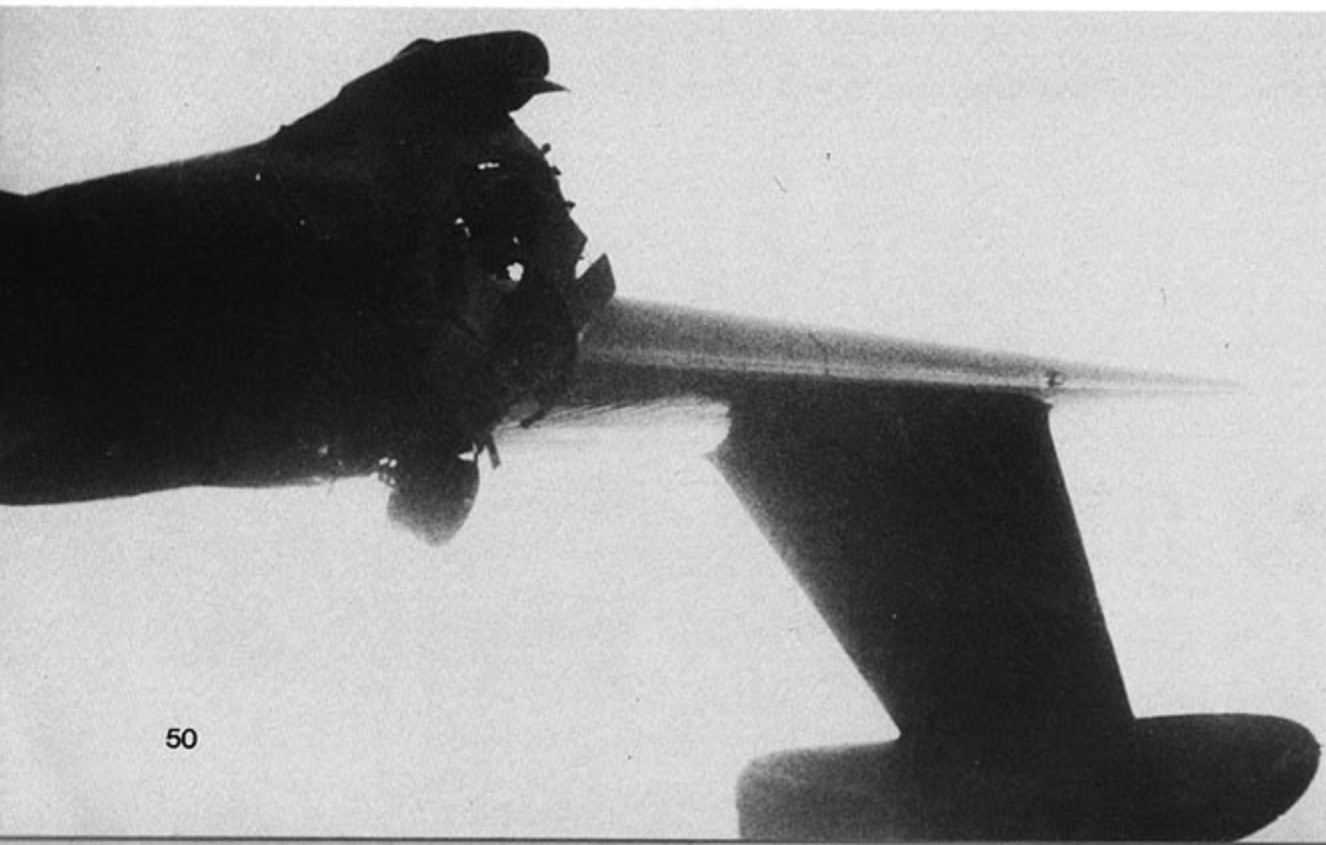




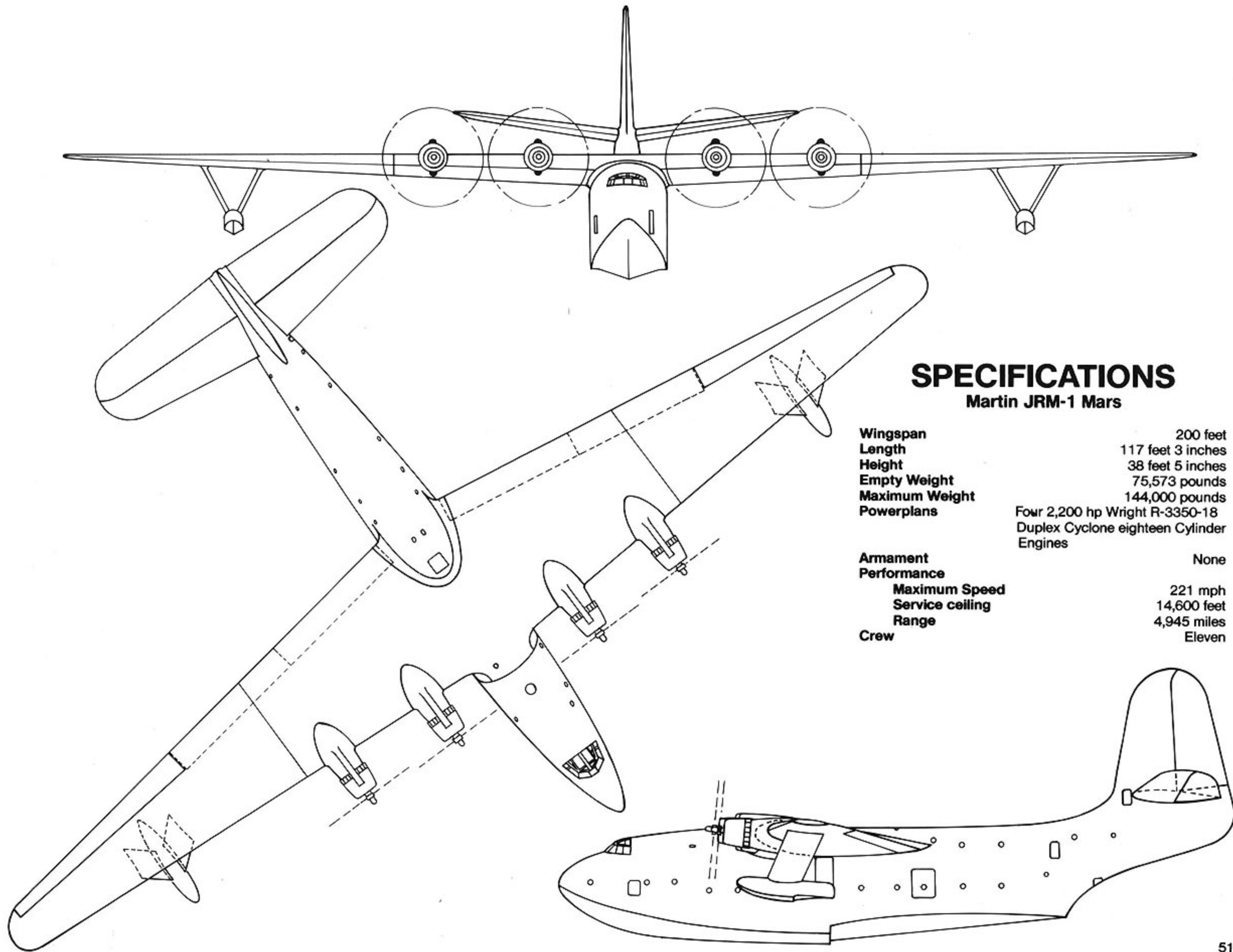
(Above) The Phillipine (JRM-1) Mars lands at Honolulu with its number one engine missing. On a 15 December 1946 flight from Alameda to Hawaii the entire engine broke loose shortly after the flight's 'no return' point had been passed. Pilots Durso and Kellerman were able to trim the giant Mars and landed it safely at Hawaii. The landing was uneventful. (Jim Sutton)

(Below) One of the two remaining Martin JRM-1 Mars, in fire-fighting configuration, is seen releasing water during an exhibition of its water holding capacity. These Mars are now painted a bright Red and White. (Mark Aldrich Collection)

(Below) The port outboard Curtiss Wright 3350-8 Duplex engine tore completely loose from its motor mounts and fell into the sea. (LCDR K M Hollingsworth)







## SPECIFICATIONS

### Martin JRM-1 Mars

Wingspan	200 feet
Length	117 feet 3 inches
Height	38 feet 5 inches
Empty Weight	75,573 pounds
Maximum Weight	144,000 pounds
Powerplants	Four 2,200 hp Wright R-3350-18 Duplex Cyclone eighteen Cylinder Engines
Armament	None
Performance	
Maximum Speed	221 mph
Service ceiling	14,600 feet
Range	4,945 miles
Crew	Eleven



(Below) The Navy's lone JRM-2, the Caroline Mars (BuNo 76824), was fitted with longer nacelles to house the new Pratt & Whitney R4360 28 cylinder 'corn cob' engines, allowing the boat to cruise at 175 knots. It was rated for 165,000 pounds but could operate at 176,000 pounds gross over-weight. On its ferry flight in May of 1948, to VR-2 at Alameda, it took off

from Patuxent River, flew across Florida, crossed the southern United States over El Paso, flew over San Diego and on to Alameda for a sixteen hour non-stop flight. The pilots on this flight were CMDR John Ferguson and Lt Floyd Harris. (USN)



# P6M SEAMASTER

Martin's revolutionary jet powered P6M Seamaster was conceived in the early 1950s, a period of intense aircraft experimentation. Martin had been planning a civil jet-powered flying boat airliner, which is believed to have been the possible basis of the Seamaster design, which Martin hoped would be included in the Navy's strategic striking force. Its primary mission was mine laying with secondary missions of photo-reconnaissance and heavy attack. New materials and manufacturing techniques were used which provided the XP6M-1 Seamaster the capability to use the open seas (75% of the earth's surface) where submarines could carry out logistical support when necessary. Bonded metal honeycomb, similar to that used in Martin's B-51 bomber, was used extensively.

Power was provided by four Allison J71-A-4 single-shaft turbojet engines with after burners providing 13,000 pounds of thrust capable of 600 mph. These Allison engines were installed in paired nacelles mounted above the wing with the afterburners overhanging the trailing edge of the wing. Large hinged doors allowed the engines to be changed while the aircraft was afloat.

The long sleek 134 ft fuselage had a radome on the bow, a capacious central mine bay with a rotary door capable of carrying up to 30,000 pounds of stores including a reconnaissance camera pod. The fuselage ended with a 31 foot high 'T' tail assembly. A door on the portside just behind the cockpit afforded entry to a six man crew comprised of a pilot, co-pilot, navigator, minelayer, radio operator, and an armament defense operator.

The 102-foot swept wing had fixed floats mounted directly on the wing tips without struts, which provided excellent lateral stability in the water, spoiler-ailerons, single slotted wing flaps, automatic leading edge slats, and hydro-flaps (alternating as dive brakes). The Seamaster's only defensive armament consisted of a twin 20MM mounted in the tail.

The Seamaster's long slim hull gave it better rough water handling characteristics than previous seaplanes, and hydraulic powered controls provided remarkably quick control response.

Both XP6M-1 prototypes crashed during flight tests as a result of undetected and unrelated tail problems. The first ship crashed on 7 December 1955, and the second almost a year later on 9 November 1956. However, all six of the YP6M-1s and the three P6M-2s were performing satisfactorily at the Martin plant during the first eight months of 1959. A P6M-2 was tested as an aerial tanker.

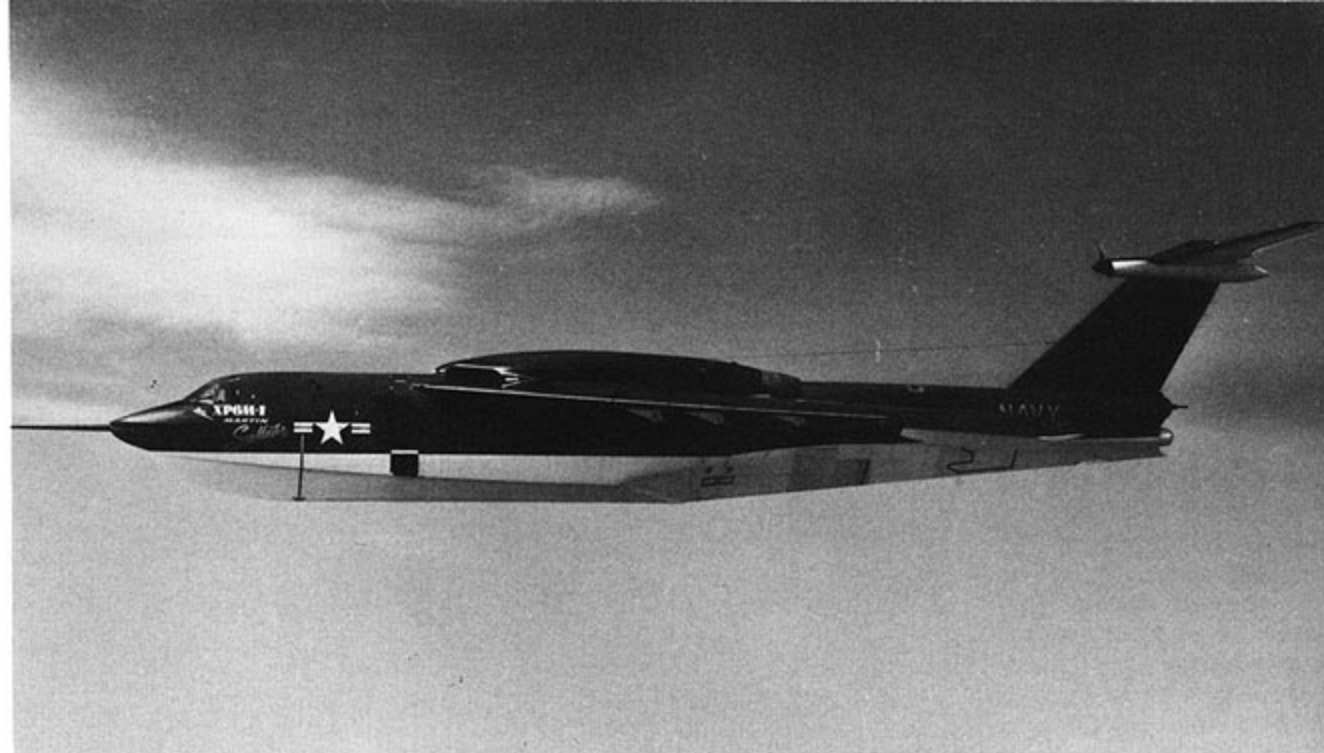
Flying boat pilots and crews recall that conventional flying boats spent a lot of time in the buoy area before getting up the ramp. Not so with the Seamaster! When the ramp area was approached, after using the hydro flaps to maneuver, the pilot would taxi into a floating beaching cradle permitting a taxi up or down the ramp.

The advancing technology of Polaris Missiles, nuclear submarines, the A-3J Vigilante, and budgetary constraints all combined to the program's cancellation on 21 August 1959. The cancellation of the Seamaster was not because of the usually expressed view of the tail problem and/or water spray ingestion, but primarily the loss of the nuclear mission to the Polaris submarine. Two seaplane tenders had been modified to handle the Seamaster. A Landing Ship Dock, USS ASHLAND (LSD-1), was being modified and a new seadrome had been built at Harvey Point, North Carolina when the program was cancelled. CDR Tazwell 'Taz' Sheppard was to be the commanding officer. Sheppard became President John F. Kennedy's Naval Aide.

JRM-1  
Martin  
Mars

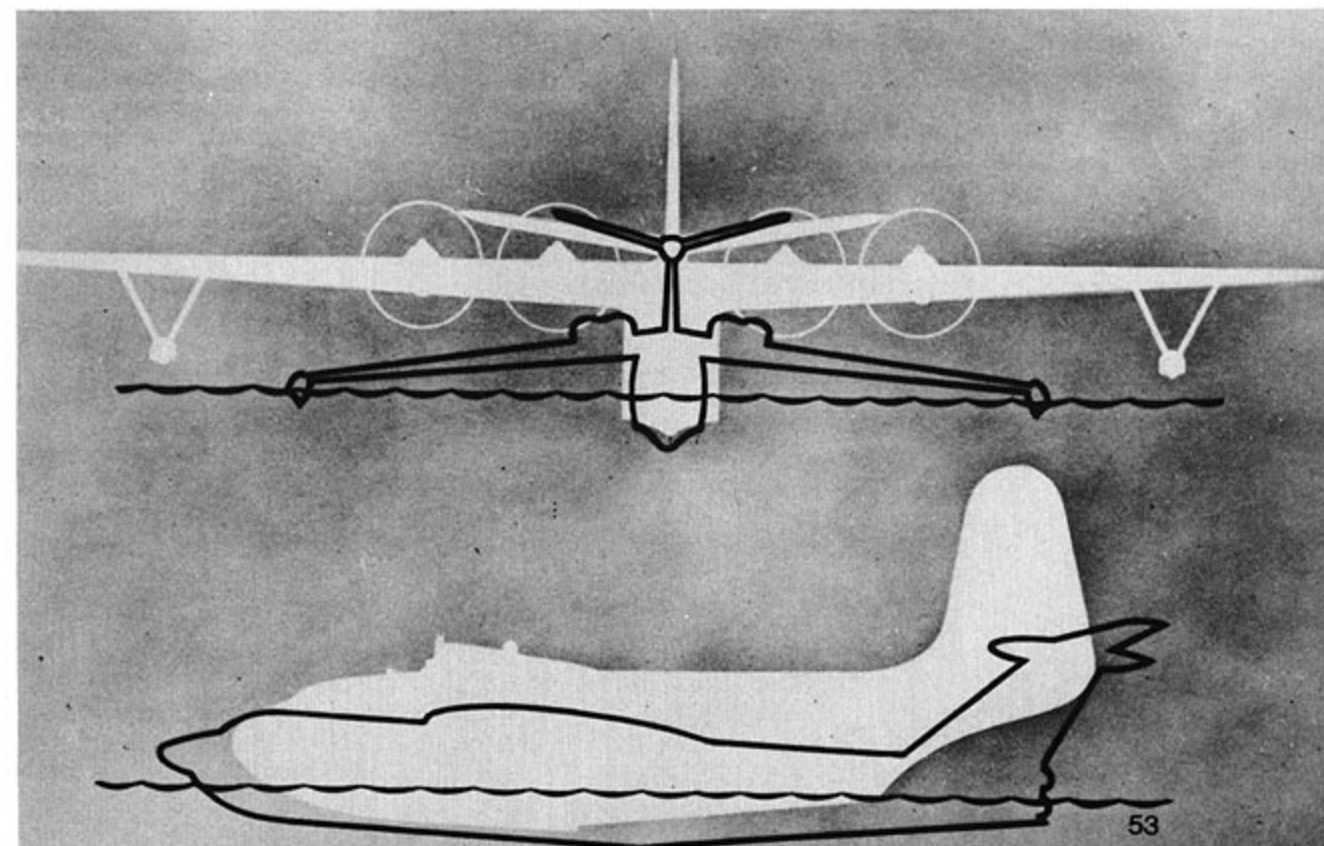


Martin  
P6M-2  
Seamaster



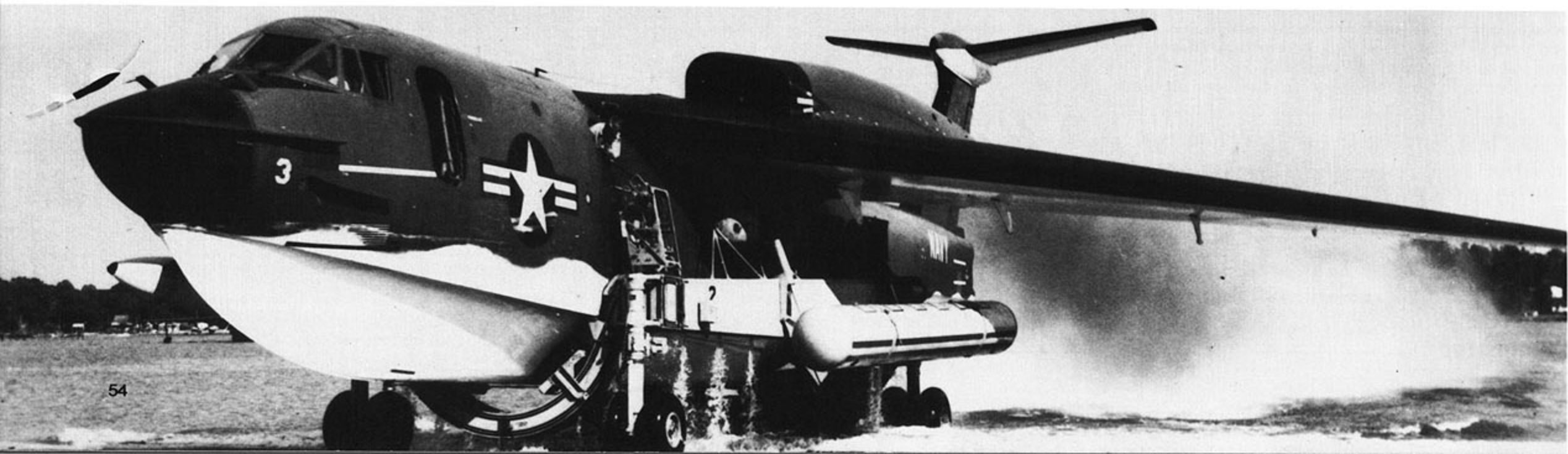
(Above) Few aircraft designs have approached the sleekness of the Seamaster's lines. Seamasters, including this XP6M-1 prototype (BuNo 138821), carried upper surfaces of Semi-gloss Sea Gray over Insignia White undersurfaces. The hydro flaps are outlined in Black. (USN)

(Below) A comparison of two Martin classics is made in this overview. The White silhouette of the JRM-1 Mars contrasts the shorter and deeper fuselage of the transport, with the Black outline of the sleek P6M Seamaster's much shorter swept wings and extremely long hull. Gross weight of the JRM-1 Mars was 165,000 pounds and the Seamaster was 160,000 pounds. (Martin-Marietta)





**A unique beaching system was developed for the Seamaster. After landing, the jet powered flying boat taxied into a beaching cradle and then taxied onto to the ramp. (Smithsonian Institution)**

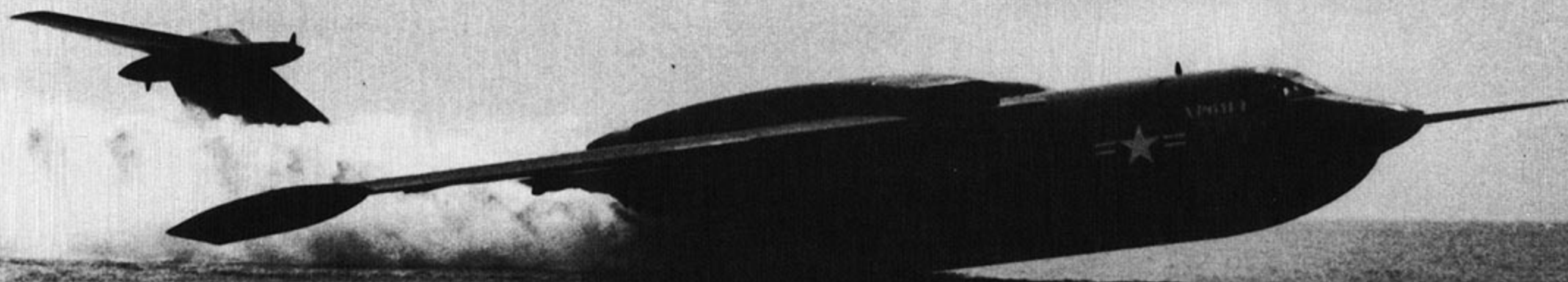


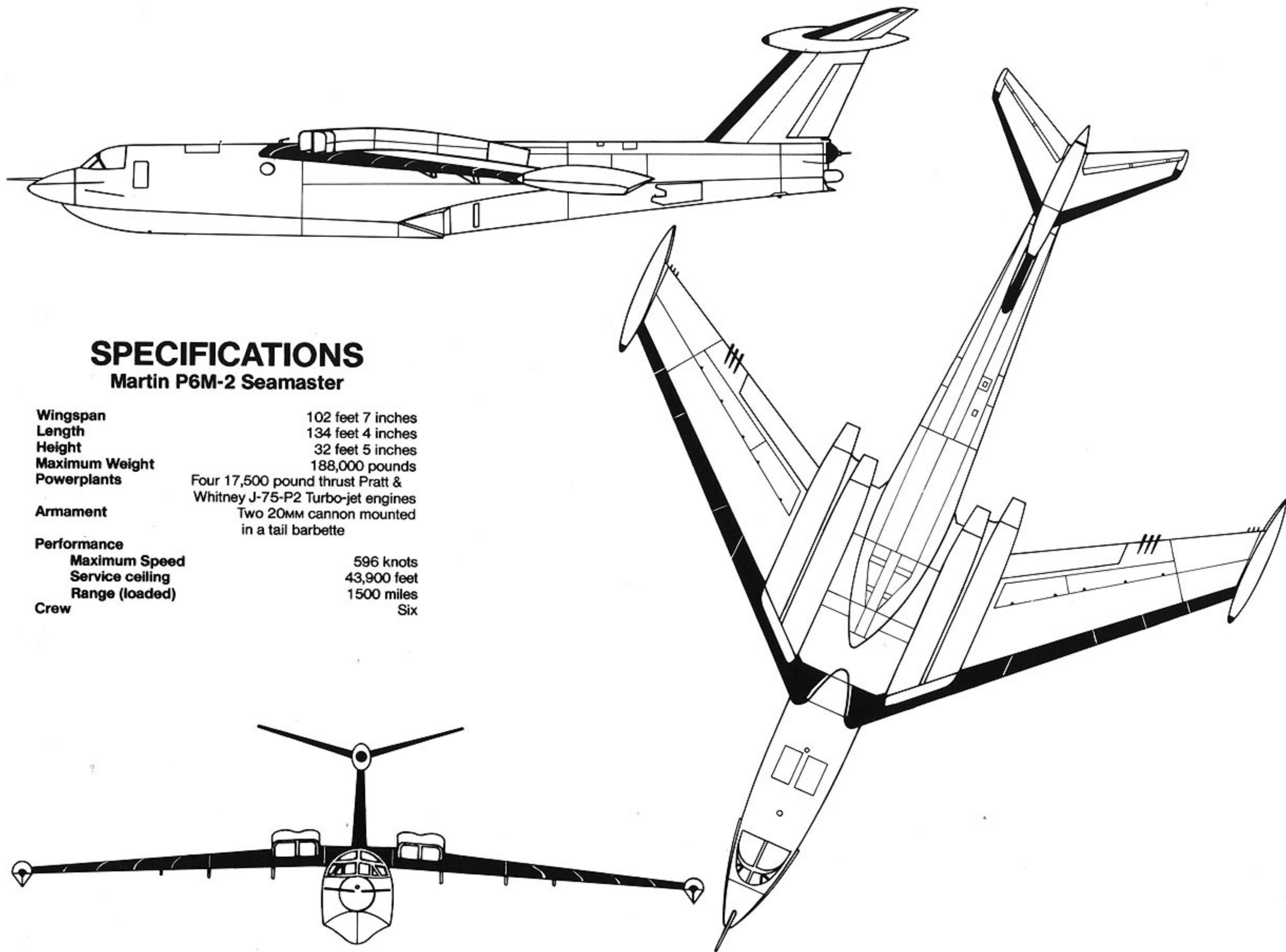




(Above) A frontal overhead view of the P6M-2 shows the rather massive J-75 engine nacelles which from the side appear much smaller. Test pilots were pleased with the water handling characteristics of the long slender hull. The hydro flaps made maneuvering in the water much more responsive, and doubled as air brakes when the Seamaster was airborne. The additional overhead cockpit panels are visible. (Martin Marietta via Richard Knott)

(Below) An XP6M-1 Seamaster rotates up onto the step as it begins its take-off run. The clean contours of the long engine nacelles, each housing a pair of Allison J-71 turbo jets, made an extremely low profile. Visibility from the cockpit was limited on the XP6M-1, but this would be corrected with the addition of glass panels over the top of the cockpit on the P6M-2. The Seamaster was equipped with wing-tip floats with no struts. (USN via Al Raithel)





## SPECIFICATIONS

### Martin P6M-2 Seamaster

Wingspan	102 feet 7 inches
Length	134 feet 4 inches
Height	32 feet 5 inches
Maximum Weight	188,000 pounds
Powerplants	Four 17,500 pound thrust Pratt & Whitney J-75-P2 Turbo-jet engines
Armament	Two 20mm cannon mounted in a tail barbette
Performance	
Maximum Speed	596 knots
Service ceiling	43,900 feet
Range (loaded)	1500 miles
Crew	Six



(Right) Four completed YP6M-1 Seamasters standing at Martin's Strawberry Point flight facility are framed by the Seamaster's beaching cradle that was used to both launch and retrieve the airplane from the water. The hydroflap, can be seen extended on the aft hull of the first Seamaster. (Martin Marietta)

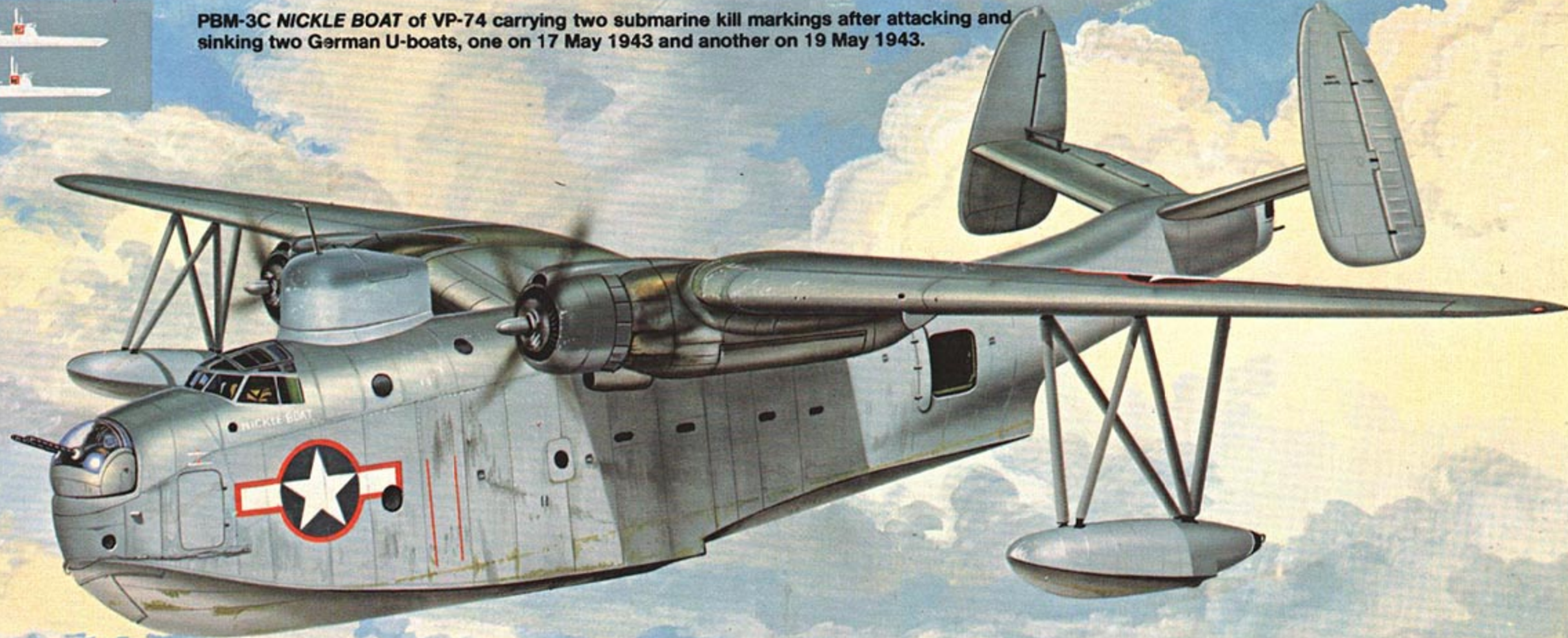


(Below) YP6M-1 Seamasters at Martin's Strawberry Point Flight Facility. The tailpipe of the outboard jets extends a little further aft than the inboard engines. Two P5M-1s are at the right. (Martin Marietta)





**PBM-3C NICKLE BOAT of VP-74 carrying two submarine kill markings after attacking and sinking two German U-boats, one on 17 May 1943 and another on 19 May 1943.**



**PBM-3D (BuNo 45255) of VPB-216 on Saipan, flown by PPC Bob Smith. This may have been the only sharkmouthed Mariner in the PBM fleet.**

